CWR-854

54Mbps Wireless-G Router

User's Guide

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1 Introduction

Installing Your Router

In this chapter, you'll learn how to connect your router.

System Requirements

- One or more PCs (desktop or notebook) with Ethernet interface
- Broadband Internet access
- Ethernet cables
- Wireless interface (if planning to use wireless functions)

Installation Instructions

Connecting the Router:

1. Make sure all **systems are** turned off, including the router, PC(s), and the cable or DSL modem (if applicable).

2. Connect the **WAN port** on the router to your cable/**DSL** modem, Ethernet Server, or hub.

3. Connect one or more client PCs to the **LAN port(s)**.

4. Connect the power adapter to the **power jack** on the router. Then, plug the power cable into an outlet.

5. Turn on your PC(s).

2 Preparing Your Network

Preparing Your Network

In this chapter, you'll learn what to do before configuring your router.
Before you can configure your router, you need to set up all the computers on your network for TCP/IP networking.

Collecting ISP Information

The following information needs to be gathered from the ISP before you can configure your router:

- Has your ISP assigned you a static IP address, or will it be assigned dynamically? If they have given you a static IP, what are the IP address, Subnet Mask, Default Gateway and DNS addresses used for this connection?
- Does your ISP use PPPoE? If so, what is your PPPoE username and password?

Call your ISP if you're not sure of the answers to these questions.

Configuring Windows for IP Networking

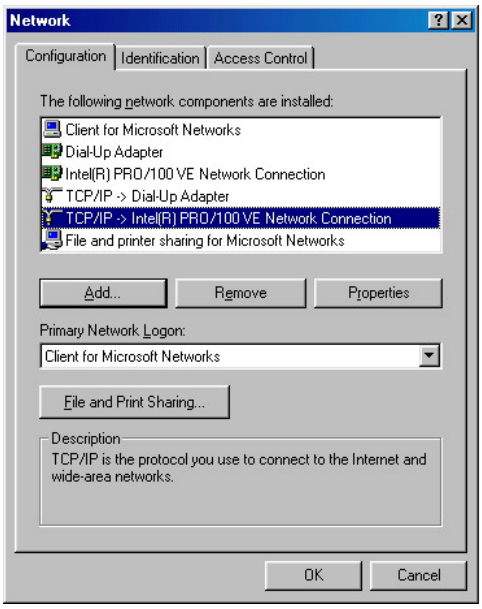
You need to configure each computer in your network for TCP/IP networking. If you plan to use the DHCP feature (recommended), you should configure each computer to receive an IP address automatically. See the procedure below.

If you don't plan to use DHCP, you'll need to manually assign an IP address to each computer. Refer to your Windows documentation for instructions on IP assignment.

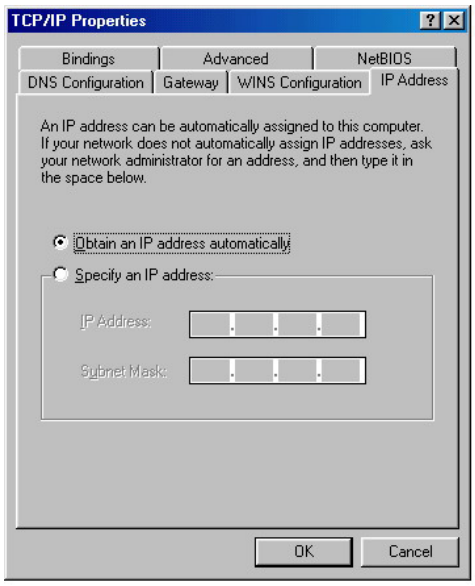
To configure Windows to receive dynamic IP address:

Configuring Windows 98 and Millennium PCs

1. Click the **Start** button. Select **Settings** and click the **Control Panel** icon. Double-click the **Network** icon.
2. On the Configuration tab, select the **TCP/IP** line for the applicable Ethernet adapter. Do not choose a TCP/IP entry whose name mentions DUN, PPPoE, VPN, or AOL. If the word **TCP/IP** appears by itself, select that line. Click the **Properties** button.



3. Click the **IP Address** tab. Select **Obtain an IP address automatically**


TCP/IP Properties
Bindings
Advanced
NetBIOS
DNS Configuration
Gateway
WINS Configuration
IP Address
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.
Obtain an IP address automatically
Specify an IP address:
IP Address:
Subnet Mask:
OK
Cancel

4. Now click the **Gateway** tab, and verify that the *Installed Gateway* field is Blank. Click the **OK** button.

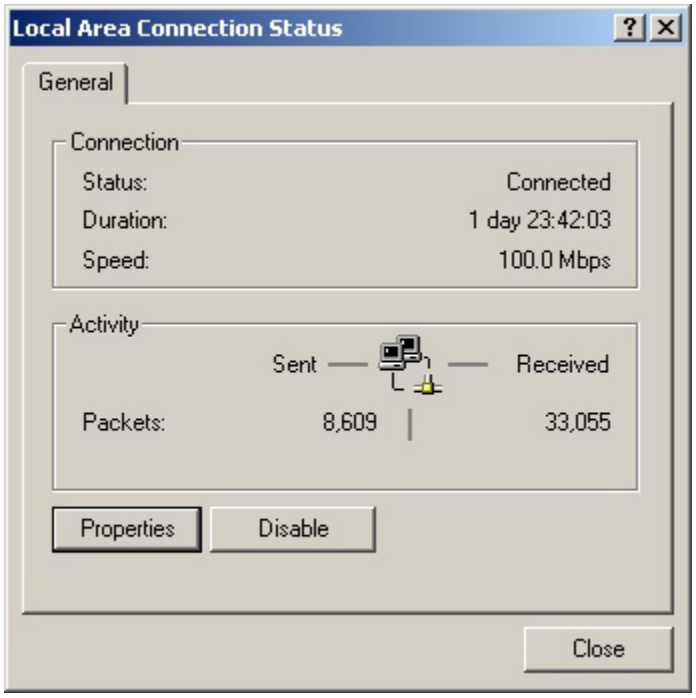
5. Click the **OK** button again. Windows may ask you for the original Windows installation disk or additional files. Check for the files at c:\windows\options\cabs, or insert your Windows CD-ROM into your CDROM drive and check the correct file location, e.g., D:\win98, D:\win9x, etc. (if "D" is the letter of your CD-ROM drive).

6. Windows may ask you to restart your PC. Click the **Yes** button. If Windows does not ask you to restart, restart your computer anyway.

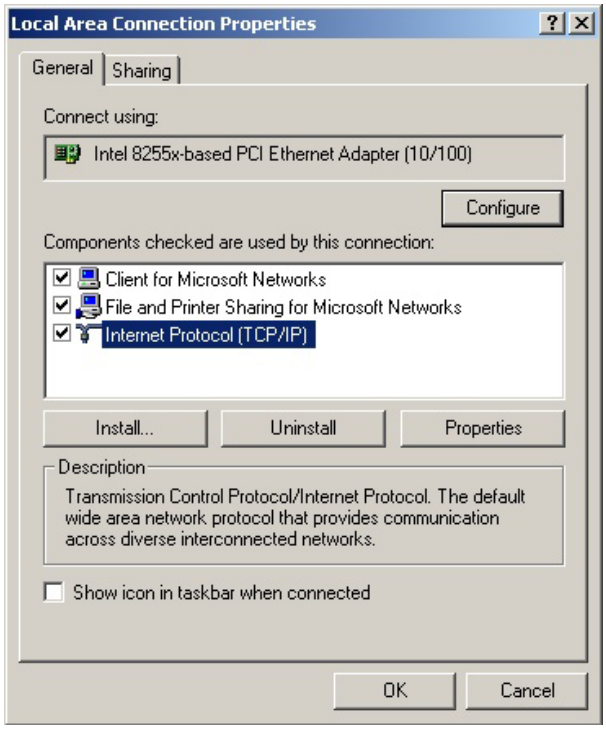
Configuring Windows 2000 PCs

1. Click the **Start** button. Select **Settings** and click the **Control Panel** icon. Double-click the **Network and Dial-up Connections** icon.

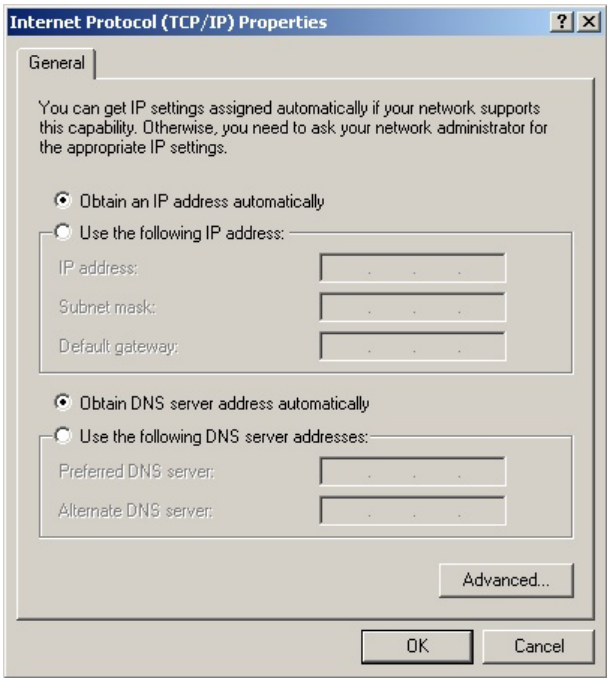
2. Select the **Local Area Connection** icon for the applicable Ethernet adapter (usually it is the first Local Area Connection listed). Double-click the **Local Area Connection**. Click the **Properties** button



3. Make sure the box next to *Internet Protocol (TCP/IP)* is checked. Highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button.



4. Select **Obtain an IP address automatically**. Once the new window appears, click the **OK** button. Click the **OK** button again to complete the PC configuration.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

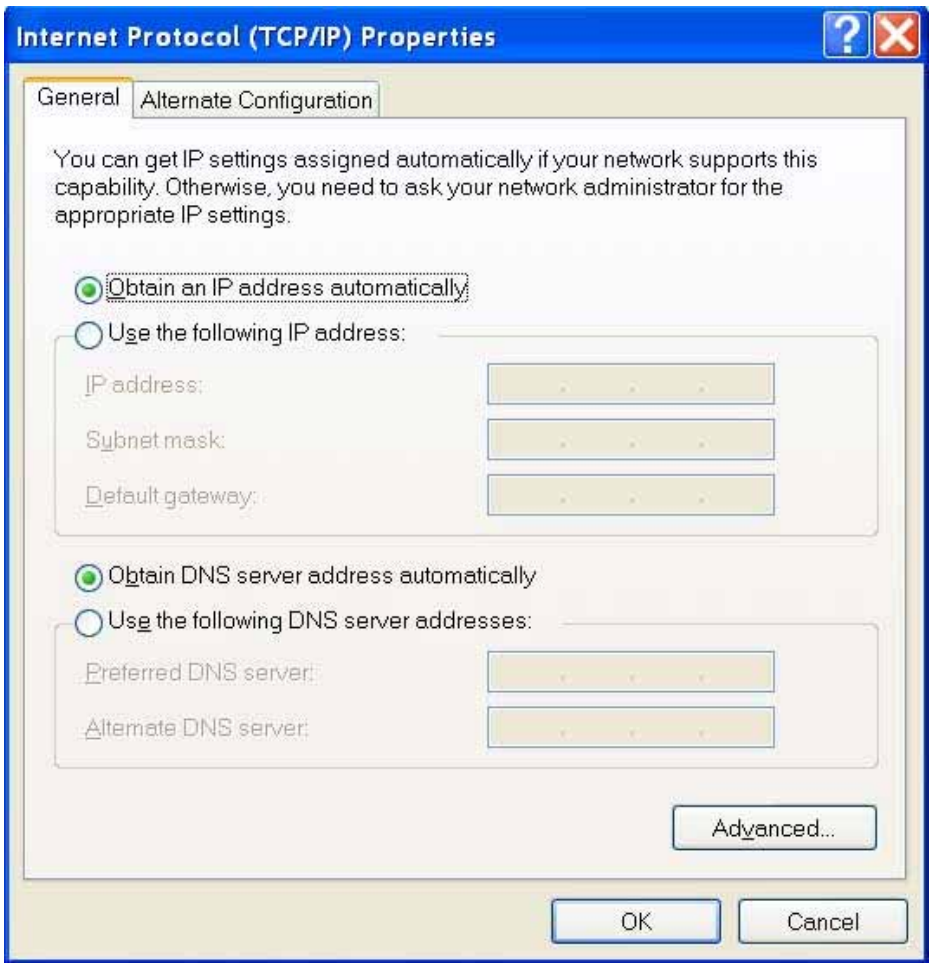
5. Restart your computer.

Configuring Windows XP PCs

The following instructions assume you are running Windows XP with the default interface. If you are using the Classic interface (where the icons and menus look like previous Windows versions), please follow the instructions for Windows 2000.

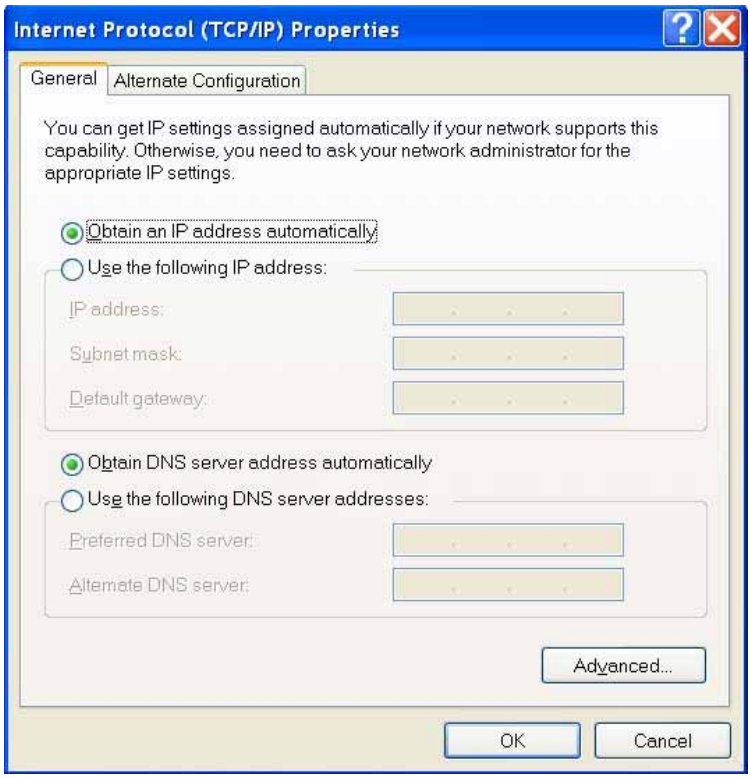
1. Click the Start button and then the Control Panel icon. Click the Network and Internet Connections icon. Then click the Network Connections icon.

2. Select the Local Area Connection icon for the applicable Ethernet adapter (usually it is the first Local Area Connection listed). Double-click the Local Area Connection. Click the Properties button.


Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

3. Make sure the box next to *Internet Protocol (TCP/IP)* is checked. Highlight **Internet Protocol (TCP/IP)**, and click the **Properties** button.

4. Select **Obtain an IP address automatically**. Once the new window appears, click the **OK** button. Click the **OK** button again to complete the PC configuration.


Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

3 Configuring this Wireless-G Router

In this chapter, it describes how to use the web management tool, a web browser-based utility that allows you to remotely configure and manage this Wireless-G Router.

Open your Web browser and type the IP address "**http://192.168.1.254"** and press **<ENTER>**.

Enter the User name and Password when prompted, the **default User name** is "**root**", and the **default Password** is "**1234**".

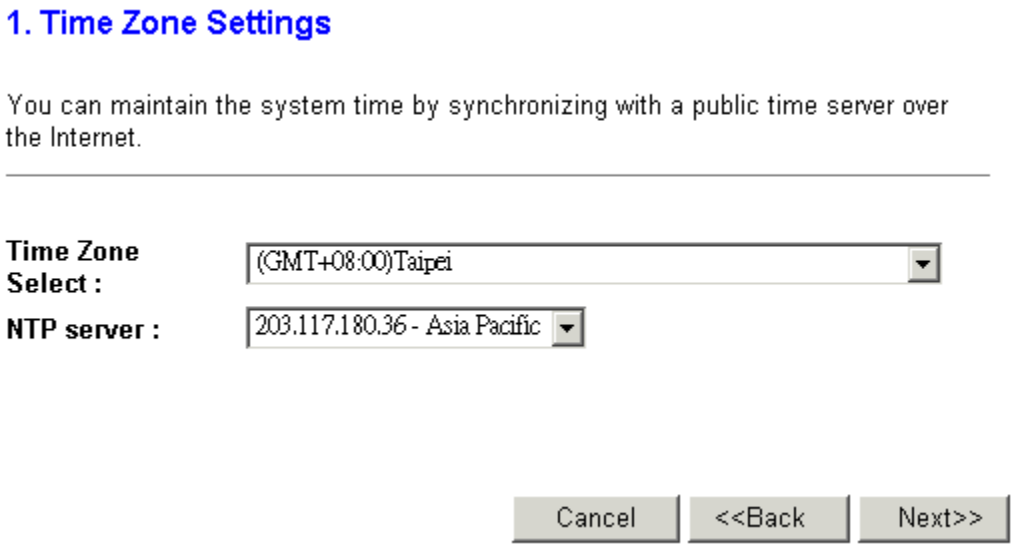
3.1 Setup Wizard

After successfully accessing to the configuration web page, the setup page will be shown as in the figure below.

This Wireless-G Router has a Setup Wizard to help you easily configure its settings. Click on "**Next"** to continue.

3.1.1 Time Zone Settings

The first step in Setup Wizard is Time Zone Settings. Users can synchronize the local clock to an available NTP server. You can enable NTP client update and select the correct Time Zone.

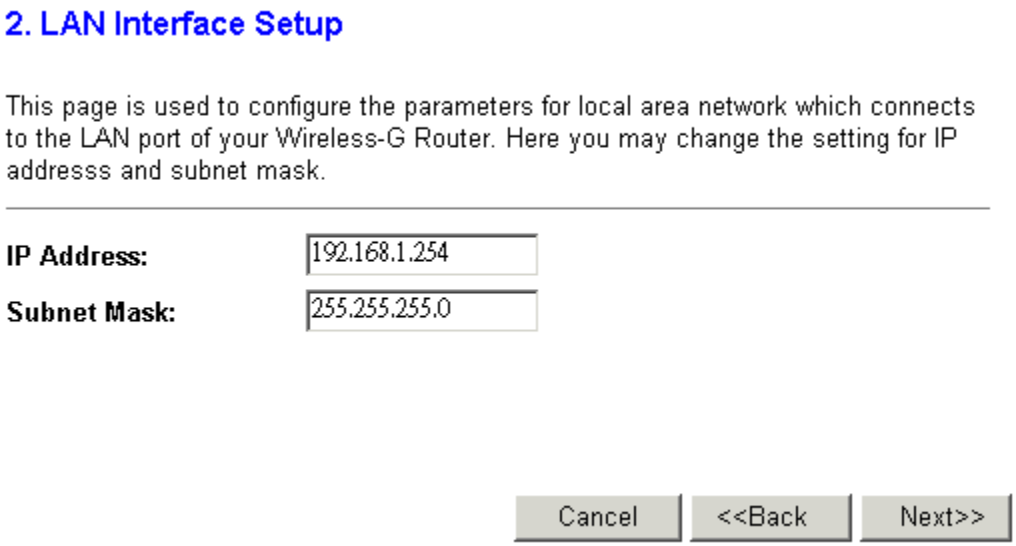

1. Time Zone Settings
You can maintain the system time by synchronizing with a public time server over the Internet.
Time Zone Select :
(GMT+08:00)Taipei
NTP server :
203.117.180.36 - Asia Pacific
Cancel
<<Back
Next>>

- **Enable NTP client update**: enable this time zone update function
- **Time Zone Select**: Select the time zone of the country where this router is located.
- **NTP serve**r: you can select the existing NTP server by clicking the down arrow or manually assign time server address.
- **Cancel**: To skip the current settings and jump to the **Setup Wizard** page.
- **Back**: To skip the current settings and go back to the last page.
- **Next:** Go to the next page.

After selecting the NTP server, click on "**Next**" button. You will enter the LAN Interface Setup page.

3.1.2 LAN Interface Setup

In the LAN interface Setup page, users can change LAN IP address and Subnet Mask here. **Most Users will not need to change these values**.

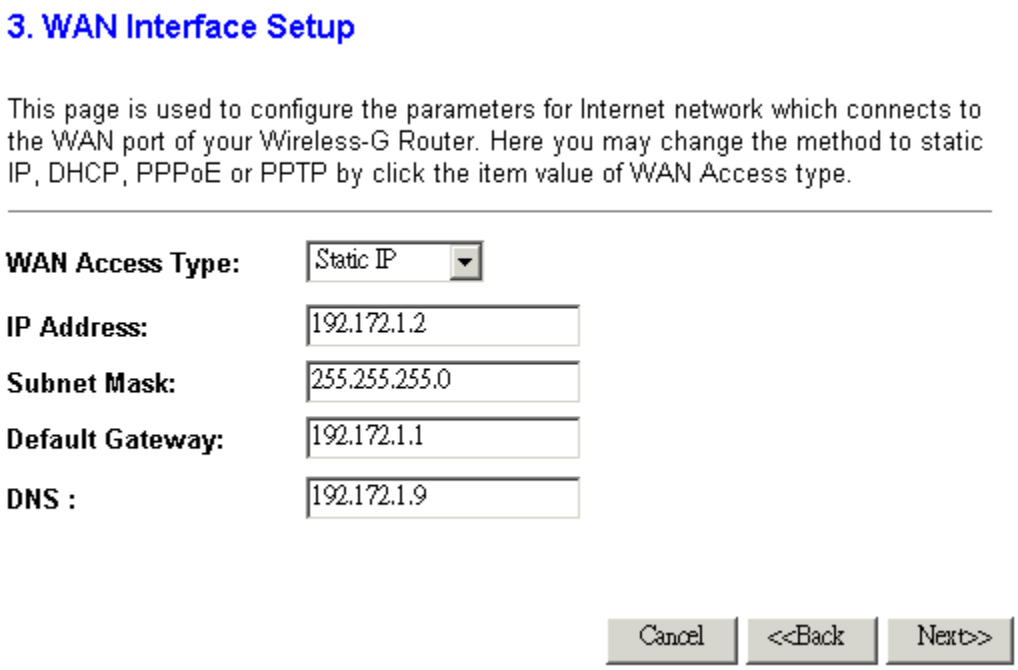

2. LAN Interface Setup
This page is used to configure the parameters for local area network which connects to the LAN port of your Wireless-G Router. Here you may change the setting for IP addresss and subnet mask.
IP Address:
192.168.1.254
Subnet Mask:
255.255.255.0
Cancel
<<Back
Next>>

- **IP Address**: Enter IP address for this Wireless-G Router.
- **Subnet Mask**: Enter the subnet mask for this Wireless-G Router.
- **Cancel**: To skip the current settings and jump to the **Setup Wizard** page.
- **Back**: To skip the current settings and go back to the last page.
- **Next:** Go to the next page.

After typing in the IP Address and Subnet Mask, click on "**Next**" button. You will enter the Wireless Basic Settings page.

3.1.3 WAN Interface Setup

After specifying your LAN settings, click on "**Next**" button. The WAN Interface Setup screen will pop up.

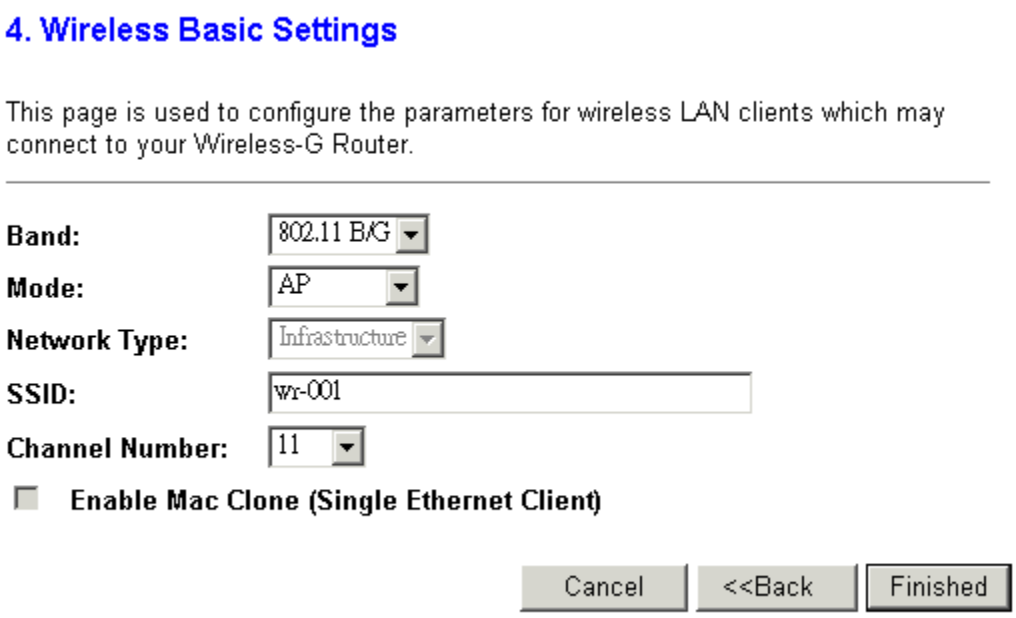

3. WAN Interface Setup
This page is used to configure the parameters for Internet network which connects to the WAN port of your Wireless-G Router. Here you may change the method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.
WAN Access Type:
Static IP
IP Address:
192.172.1.2
Subnet Mask:
255.255.255.0
Default Gateway:
192.172.1.1
DNS :
192.172.1.9
Cancel
<<Back
Next>>

- **Cancel**: To skip the current settings and jump to the **Setup Wizard** page.
- **Back**: To skip the current settings and go back to the last page.
- **Next:** Go to the next page.

Users have to select the WAN Access type, WAN IP address, Subnet Mask and Default gateway. After all items are set, click on "**Next**" button. You will enter the Wireless Basic Settings page.

3.1.4 Wireless Basic Settings

In the Wireless Basic Settings page, users can configure the parameters: "Band", "Mode", "Network Type", " SSID", and "Channel Number".

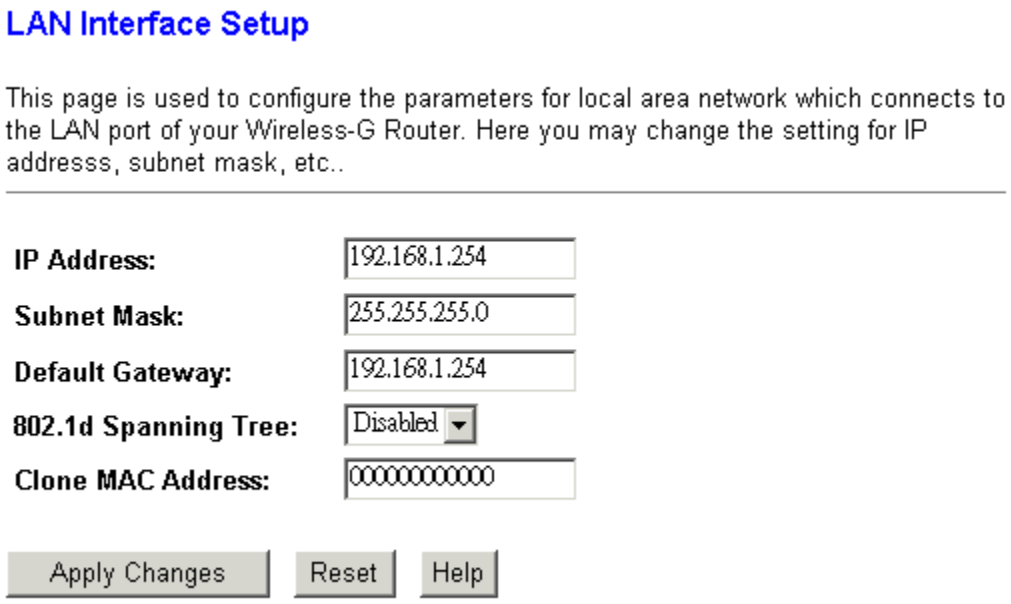


- **Operating Band**: 802.11B/G, 802.11G or 802.11B
- **Operating Mode**: AP, Client, WDS, and AP+WDS.
- **Network type**: when operating mode is “Client” mode, users can select the network type as “infrastructure” or “Adhoc”.
- **SSID**: The SSID differentiates one WLAN from another, therefore, all wireless access points/routers and all wireless devices attempting to connect to a specific WLAN must use the same SSID. It is case-sensitive and must not exceed 32 characters
- **Channel Number**: The number of channels supported depends on the region of this Wireless-G Router. All stations communicating with this Wireless-G Router must use the same channel. **(Note: not supported in client mode)**
- **Enable Mac clone**: when operating mode is “Client” mode and only one Ethernet client exists, users can enable this Mac clone feature to connect with the wireless station easily.
- **Cancel**: To skip the current settings and jump to the **Setup Wizard** page.
- **Back**: To skip the current settings and go back to the last page.

After all items are set, click on “**Finished**” button to save all the parameters you have set.

3.2 LAN Settings

“LAN Interface Setup” allows you to configure the parameters for local area network which connects to the LAN port of your Wireless-G Router.



- **IP Address**: Enter IP address for this Wireless-G Router.
- **Subnet Mask**: Enter the subnet mask for this Wireless-G Router.
- **Default Gateway**: Enter Default Gatewayfor this Wireless-G Router.
- **802.1d Spanning Tree**: On LAN side, it supports Spanning Tree Protocol to avoid physical loop problem.
- **Clone MAC Address**: You can assign a new MAC address for external DHCP server to be cloned.
- **Apply Changes**: Click on “Apply Changes” to confirm to logout right now.
- **Reset:** Click on “Reset” to undo your changes.
- **Help**: To request help information.

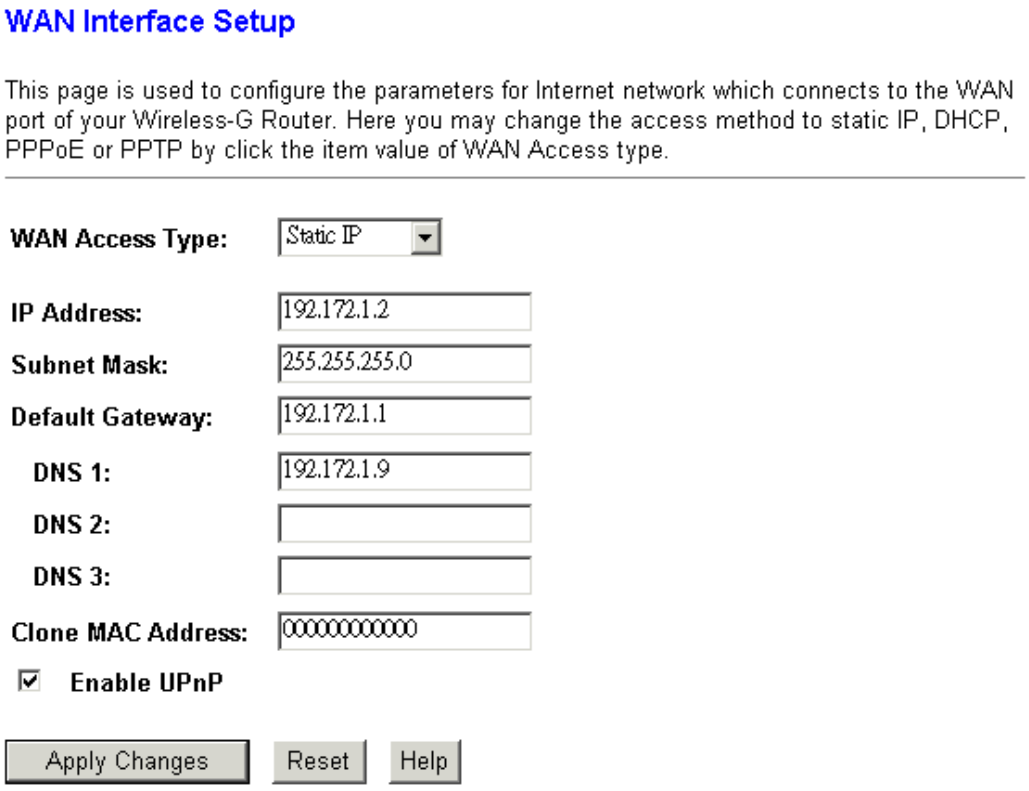
3.3 WAN Settings

“WAN Interface Setup” allows you to configure the parameters for Internet network which connects to the WAN port of your Wireless-G Router. There are four access types: Static IP, DHCP Client, PPPoE and PPTP.

:

3.3.1 Static IP

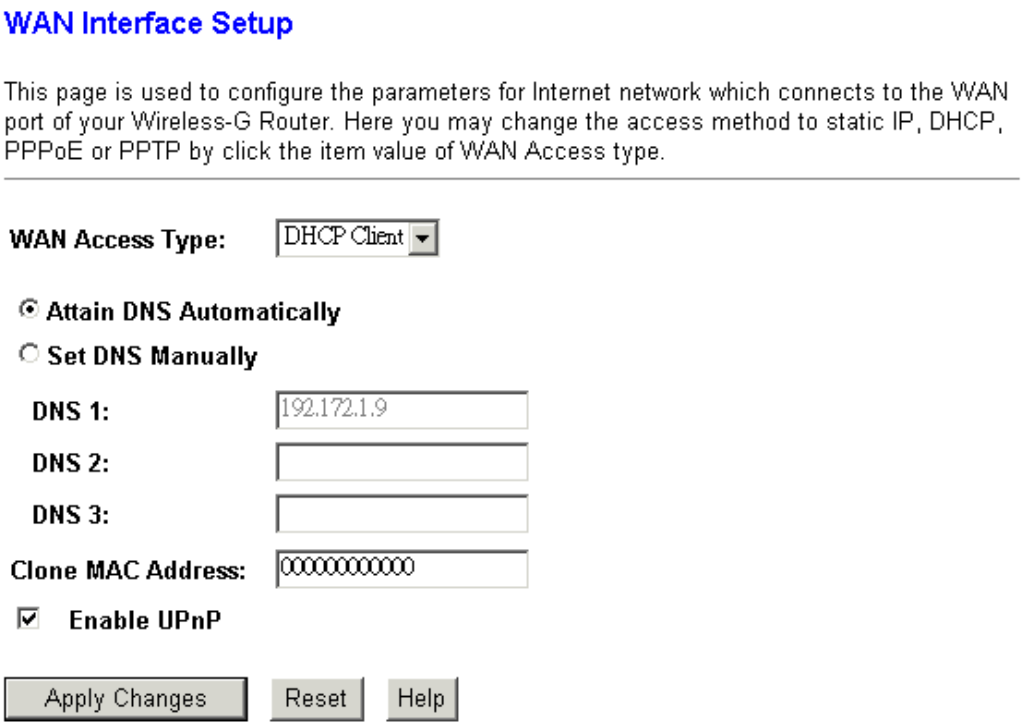
If you are subscribing for a static IP from your ISP, you should select “Static IP” as your “WAN Access Type”. You need to enter the information of IP address, Subnet Mask, Default Gateway, Primary DNS Server and Secondary DNS Server.



- **WAN Access Type**: select the **Static IP** connection
- **IP Address**: this is the IP address that your ISP has given you.
- **Subnet Mask**: enter the subnet mask provided by your ISP
- **Default Gateway**: enter the default gateway provided by your ISP
- **DNS1**: enter this Primary DNS provided by your ISP
- **DNS2**: enter this Secondary DNS if necessary.
- **DNS3**: enter this Tertiary DNS if necessary.
- **Clone MAC Address**: if your ISP blocked the MAC address of a network card, you may use “Clone MAC Address to” duplicate the MAC address to the MAC address in the WAN port.
- **Enable UPnP**: It allows to enable or disable uPNP feature here. After you enable the uPNP feature, all client systems that support uPNP, like Windows XP, can discover this router automatically and access the Internet throuth this router without any configuration.
- **Apply Changes**: Click on “Apply Changes” to confirm to logout right now.
- **Reset:** Click on “Reset” to undo your changes.
- **Help**: To request help information.

3.3.2 DHCP Client

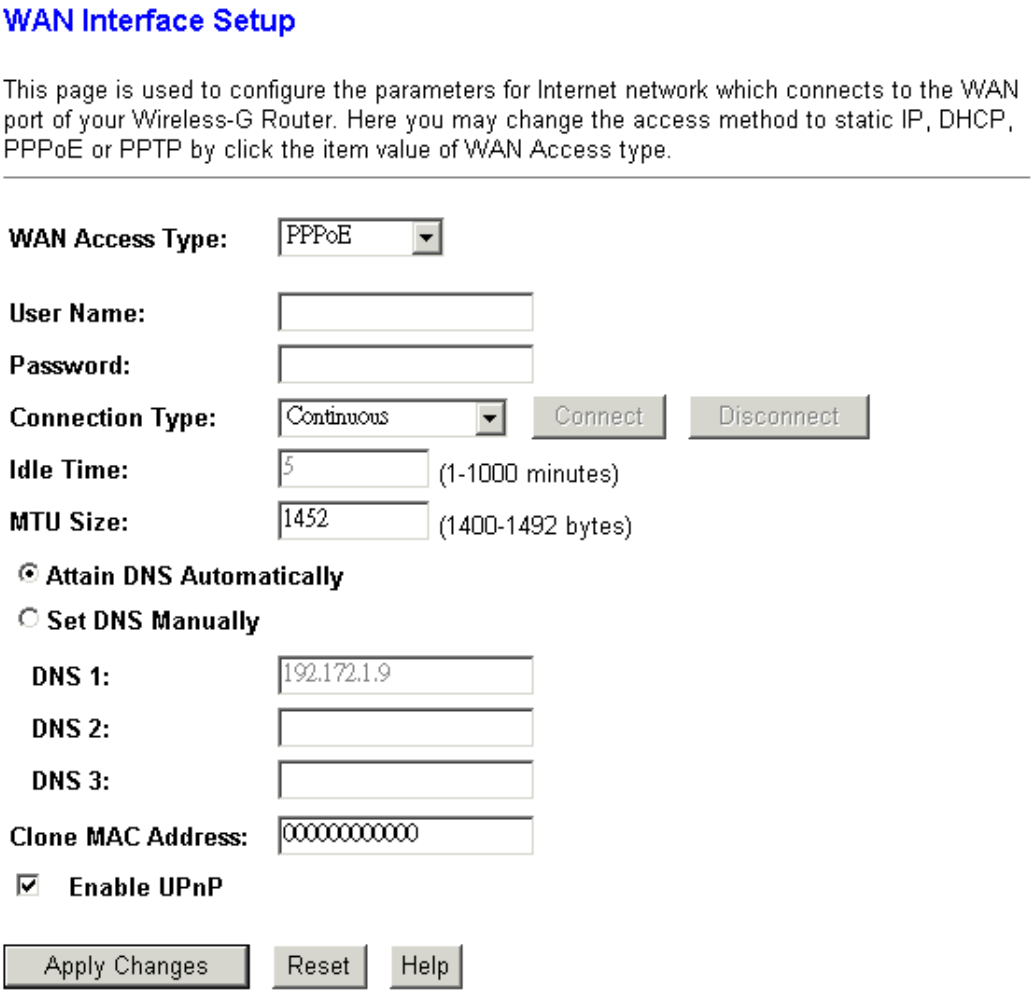
The DHCP client also called "Dynamic IP address". DHCP is the protocol that automatically configures an IP address, netmask, gateway, and DNS addresses. The DHCP client gets the router's IP address and other network information. Most cable broadband service providers use this method.


WAN Interface Setup
This page is used to configure the parameters for Internet network which connects to the WAN port of your Wireless-G Router. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.
WAN Access Type:
DHCP Client
Attain DNS Automatically
Set DNS Manually
DNS 1:
192.172.1.9
DNS 2:
DNS 3:
Clone MAC Address:
000000000000
Enable UPnP
Apply Changes
Reset
Help

- **WAN Access Type**: select the **DHCP Client** connection
- **Attain DNS Automatically**: enable to attain DNS from your ISP automatically.
- **Set DNS Manually**: allow user to set the DNS manually.
- **DNS1**: enter a specific DNS to this Primary field.
- **DNS2**: enter this Secondary DNS if necessary.
- **DNS3**: enter this Tertiary DNS if necessary.
- **Clone MAC Address**: if your ISP blocked the MAC address of a network card, you may use “Clone MAC Address to” duplicate the MAC address to the MAC address in the WAN port.
- **Enable UPnP**: It allows to enable or disable uPNP feature here. After you enable the uPNP feature, all client systems that support uPNP, like Windows XP, can discover this router automatically and access the Internet throuth this router without any configuration.
- **Apply Changes**: Click on “Apply Changes” to confirm to logout right now.
- **Reset:** Click on “Reset” to undo your changes.
- **Help**: To request help information.

3.3.3 PPPoE

PPPoE stands for “Point-to-Point Protocol over Ethernet”. PPP is the technology used for dialup Internet access. PPPoE works similarly except it works over a network connection. You'll need to enter your PPPoE username and password. Some ISPs also require a service name to be entered. Usually, you do not need to enter the IP/DNS addresses. However, if you have a static IP through PPPoE, then you will need to enter your IP and DNS addresses your ISP provides.



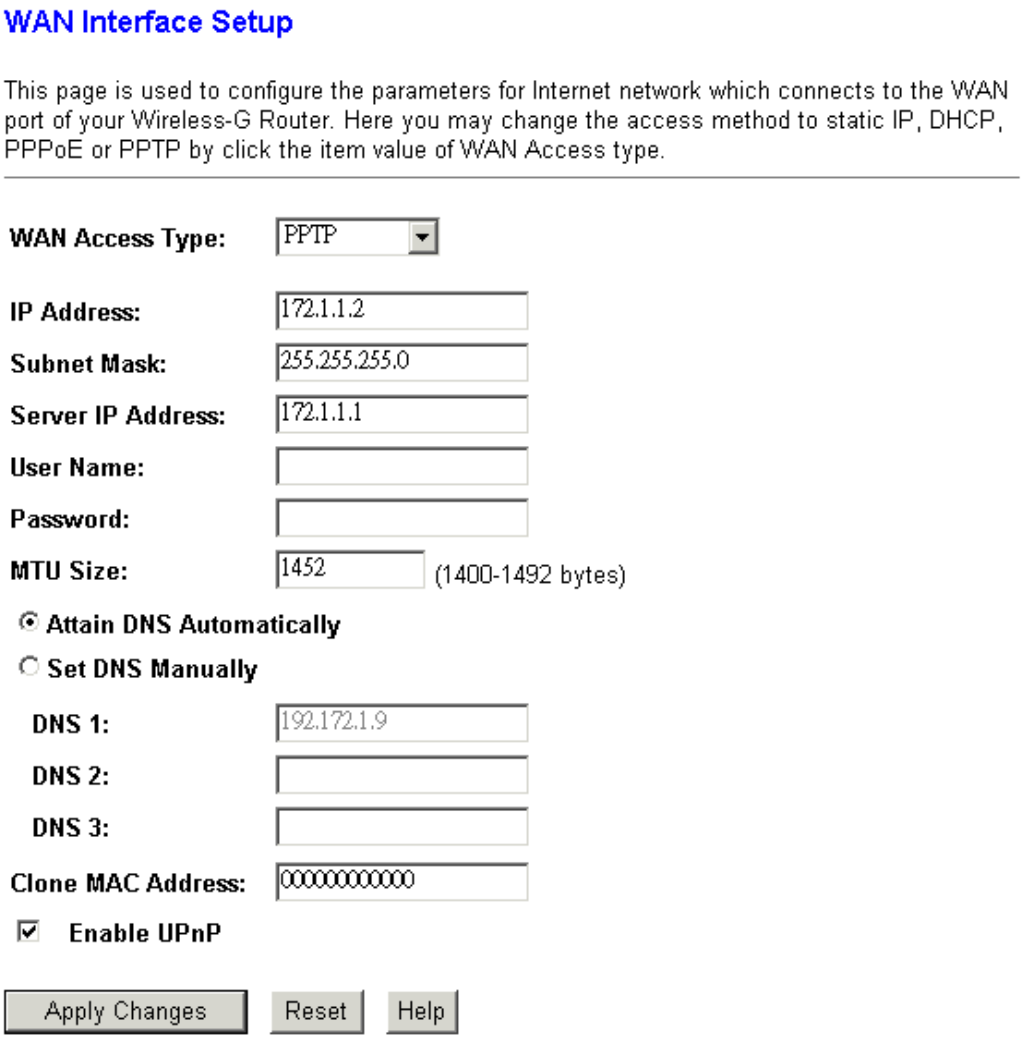
- **WAN Access Type**: select the **PPPoE** connection
- **User Name**: enter the User Name provided by your ISP
- **Password**: enter the Password provided by your ISP
- **Connection Type**: there are three connection type – **continuous**, **connect on demand** and **manual**.
  - **Continuous**: the connection to the ISP is already connected.
  - **Connect On Demand**: the connection to the ISP is build only your application is active to connect the Internet.
  - **Manual:** the connection to the ISP is build if you set manually.
- **Idle Time**: active only if the connection type is selected to **Connect On Demand.** The idle time value is defined the time of your application not accessing to the Internet anymore. When the idle time is reached, the router will disconnect the WAN port connection to your ISP.
- **MTU Size**: MTU is the Maximum Transmission Unit. It specifies the largest packet size permitted for Internet transmission. Keep the default setting, 1452, to have the router select the best MTU for your Internet connection.
- **Attain DNS Automatically**: enable to attain DNS from your ISP automatically.
- **Set DNS Manually**: allow user to set the DNS manually.
- **DNS1**: enter a specific DNS to this Primary field.
- **DNS2**: enter this Secondary DNS if necessary.
- **DNS3**: enter this Tertiary DNS if necessary.
- **Clone MAC Address**: if your ISP blocked the MAC address of a network card, you may use “Clone MAC Address to” duplicate the MAC address to the MAC address

in the WAN port.

- **Enable UPnP**: It allows to enable or disable uPNP feature here. After you enable the uPNP feature, all client systems that support uPNP, like Windows XP, can discover this router automatically and access the Internet throuth this router without any configuration.
- **Apply Changes**: Click on “Apply Changes” to confirm to logout right now.
- **Reset:** Click on “Reset” to undo your changes.
- **Help**: To request help information.

3.3.4 PPTP

PPTP stands for “Point-to-Point Tunneling Protocol”. PPTP is used to join 2 networks using the Internet as an intermediary network. It allows you to connect your home and work network over the Internet. The key is to enter the PPPTP userID, password, and PPTP Gateway IP address. The IP addresses, subnet mask, and default gateway may or may not be required.



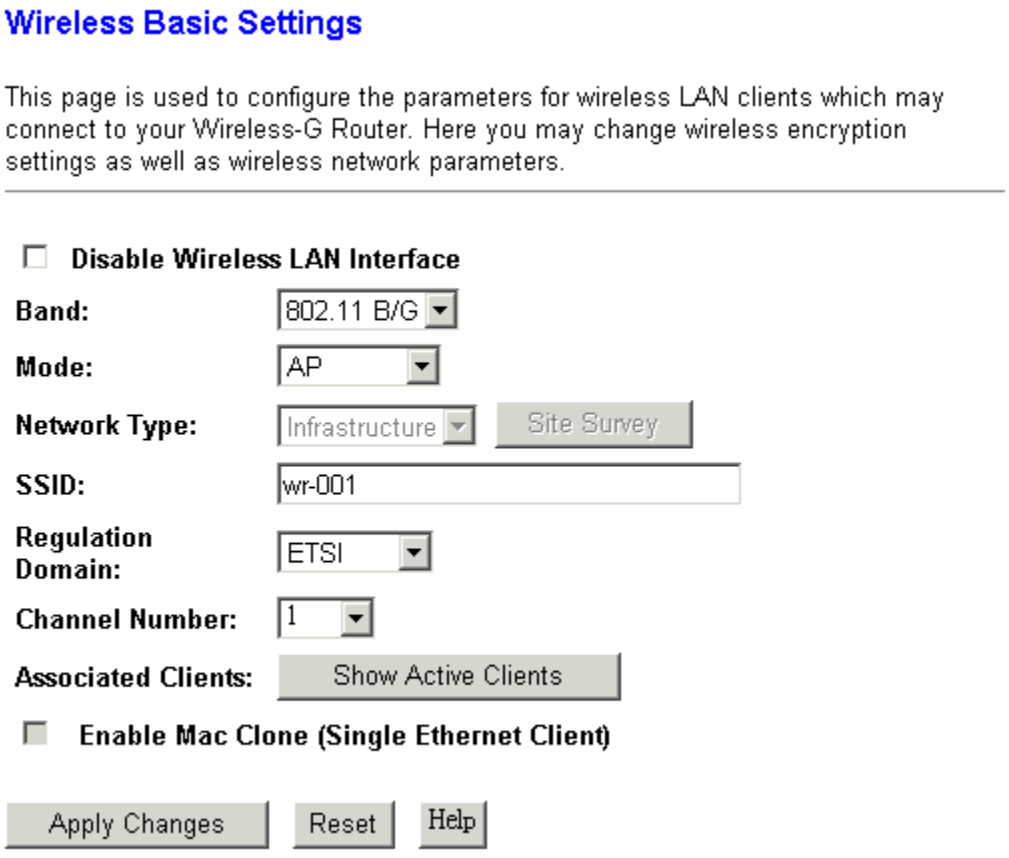
- **WAN Access Type**: select the **PPTP** connection
- **IP Address**: enter the IP Address provided by your ISP
- **Subnet Mask**: enter the Subnet Mask provided by your ISP
- **Server IP Address**: enter the Server IP Address provided by your ISP
- **User Name**: enter the User Name provided by your ISP
- **Password**: enter the Password provided by your ISP

- **MTU Size**: MTU is the Maximum Transmission Unit. It specifies the largest packet size permitted for Internet transmission. Keep the default setting, 1452, to have the router select the best MTU for your Internet connection.
- **Attain DNS Automatically**: enable to attain DNS from your ISP automatically.
- **Set DNS Manually**: allow user to set the DNS manually.
- **DNS1**: enter a specific DNS to this Primary field.
- **DNS2**: enter this Secondary DNS if necessary.
- **DNS3**: enter this Tertiary DNS if necessary.
- **Clone MAC Address**: if your ISP blocked the MAC address of a network card, you may use “Clone MAC Address to” duplicate the MAC address to the MAC address in the WAN port.
- **Enable UPnP**: It allows to enable or disable uPNP feature here. After you enable the uPNP feature, all client systems that support uPNP, like Windows XP, can discover this router automatically and access the Internet throuth this router without any configuration.
- **Apply Changes**: Click on “Apply Changes” to confirm to logout right now.
- **Reset:** Click on “Reset” to undo your changes.
- **Help**: To request help information.

3.4 Wireless

3.4.1 Basic Settings

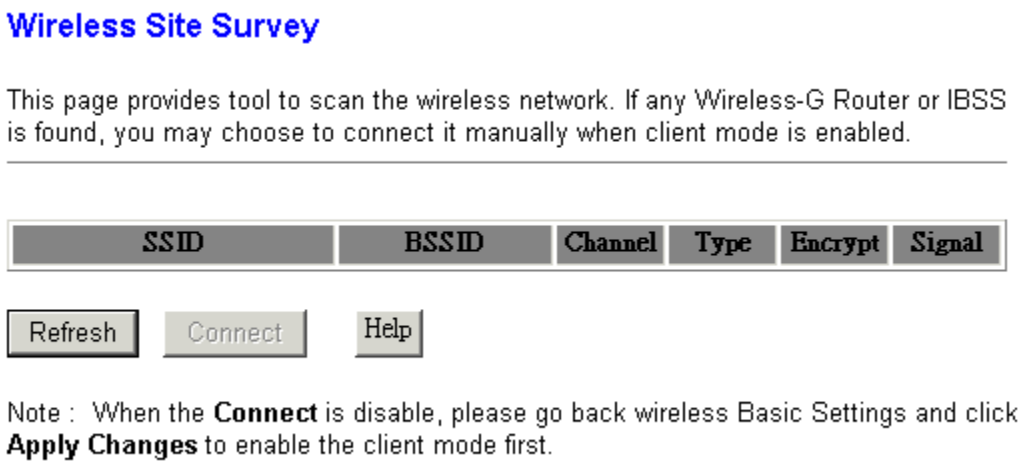
The wireless basic settings include Band, Mode, SSID and Channel Number.



- **Disable Wireless LAN Interface**: check or uncheck (Enable or Disable this wireless interface).
- **Band**: This Wireless-G Router can support three RF band: 802.11B/G, 802.11G and 802.11B.

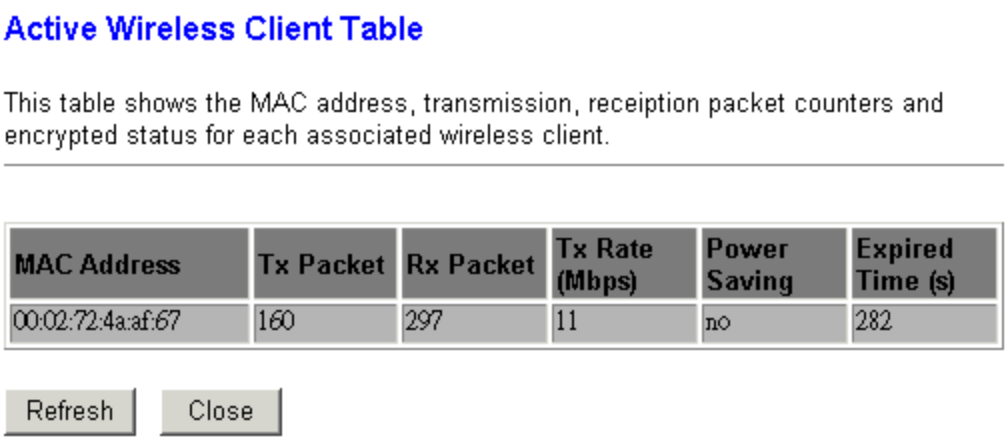
- **Mode**: This Wireless-G Router supports four operating modes: AP, client, WDS, and AP+WDS.
- **Network Type**: when operating mode is Client mode, users can select the network type as “Infrastructure” or “Adhoc” mode.
- **SSID**: The SSID differentiates one WLAN from another, therefore, all wireless access points/routers and all wireless devices attempting to connect to a specific WLAN must use the same SSID. It is case-sensitive and must not exceed 32 characters.
- **Regulation Domain**: Different countries have different Regulation Domains which allow only specific radio frequencies.
- **Channel Number**: The number of channels supported depends on the region of this Wireless-G Router. All stations communicating with this Wireless-G Router must use the same channel.
- **Associated Clients**: When you click on the “Show Active Client” button, it will show all the clients already associating this Wireless-G Router, see the “Active Wireless Client Table”, only valid for AP mode and AP+WDS mode.
- **Enable Mac clone**: when operating mode is Client mode and only one Ethernet client exists, users can enable this Mac clone feature to connect with wireless station easily.
- **Apply Changes**: Click on “Apply Changes” to save the setting.
- **Reset:** Click on “Reset” button to undo your changes.
- **Help**: To request help information.

In the figure above, click on “**Site Survey**” button, the “Wireless Site Survey” table will display as below:


Wireless Site Survey
This page provides tool to scan the wireless network. If any Wireless-G Router or IBSS is found, you may choose to connect it manually when client mode is enabled.
SSID
BSSID
Channel
Type
Encrypt
Signal
Refresh
Connect
Help
Note : When the Connect is disable, please go back wireless Basic Settings and click Apply Changes to enable the client mode first.

- **Refresh:** Click on “**Refresh**” button to show and renew the table.
- **Connect:** You can select the **“Select”** radio button, and then click on “**Connect**” button, the connection will be established.
- **Help**: To request help information.

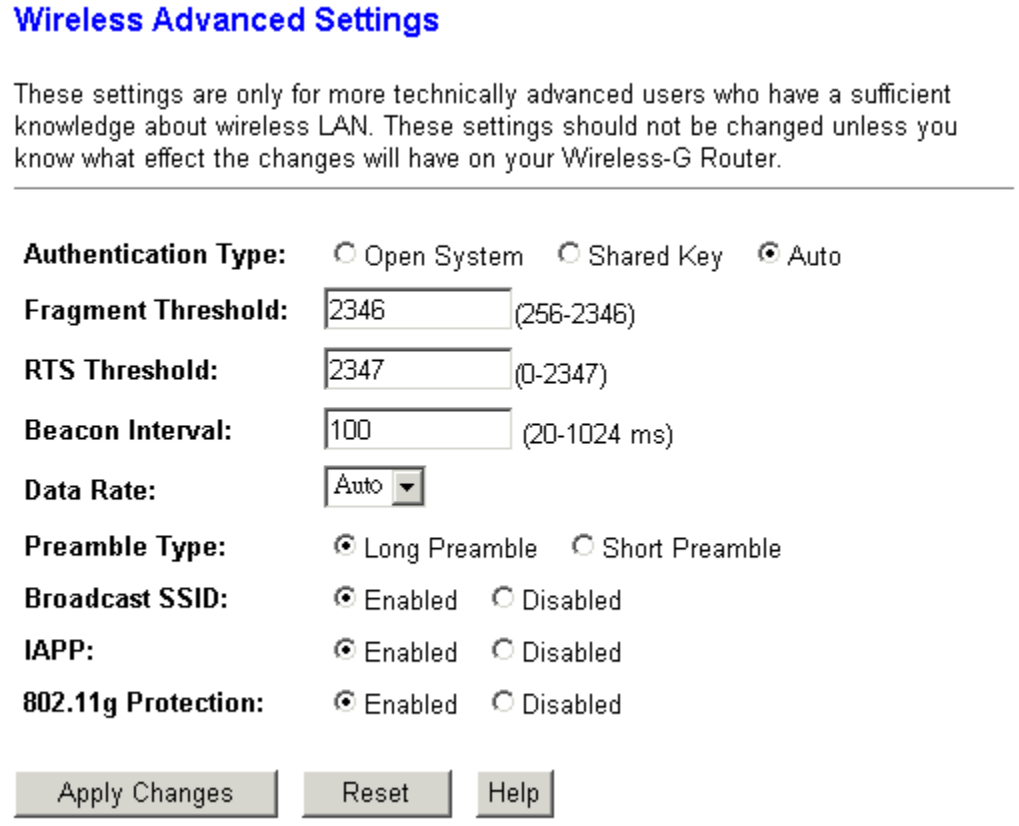
In the figure above, click on “**Show Active Clients**” button while there are wireless clients connected to this Wireless-G Router. You will see the figure below to show the MAC address, transmission, reception packet counters and encrypted status for each associated wireless client.



- **Refresh:** Click on "**Refresh**" button to show the latest information.
- **Close:** Click on "**Close**" button to close this window.

3.4.2 Advanced Settings

In Advanced Settings page, more 802.11 related parameters are tunable.



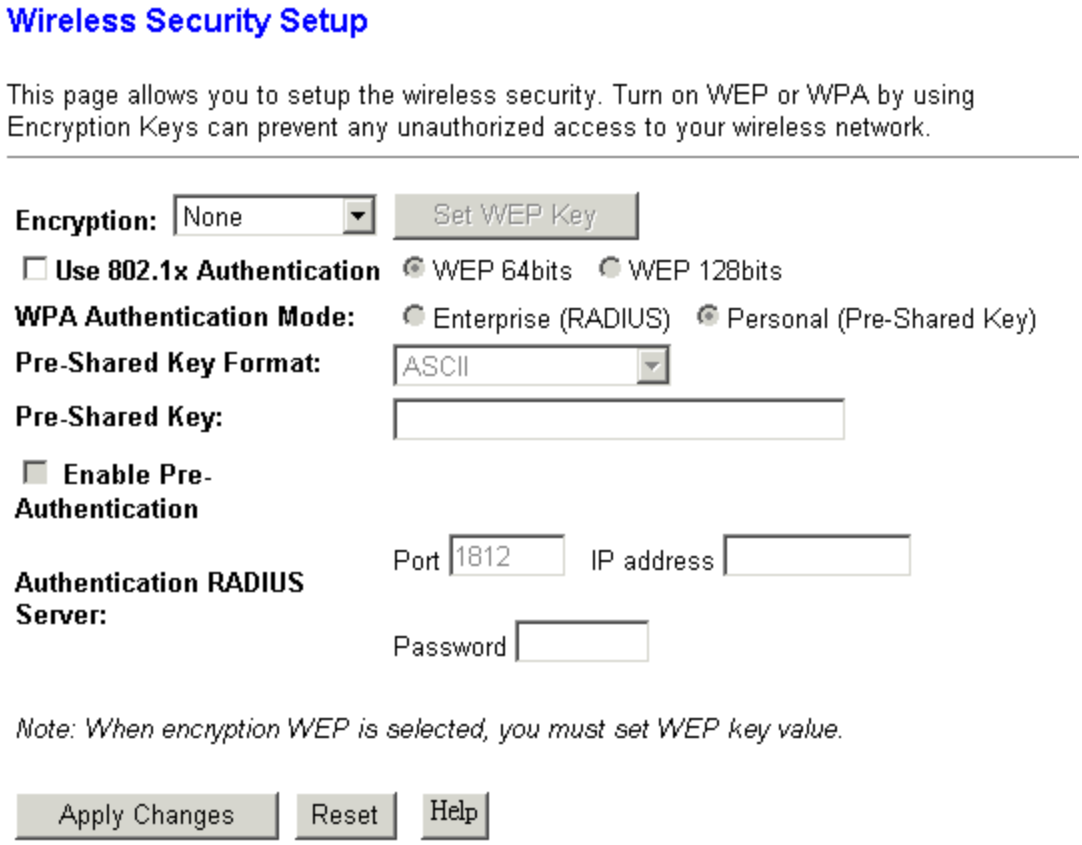
- **Authentication Type**: There are three Authentication Type- Open System, Shared Key, and Auto
- **Fragment Threshold**: Fragmentation mechanism is used for improving the efficiency when high traffic flows along in the wireless network. If a wireless client often transmits large files in wireless network, you can enter new Fragment

Threshold value to split the packet. The value can be set from 256 to 2346. The default value is 2346.

- **RTS Threshold**: RTS Threshold is a mechanism implemented to prevent the "Hidden Node" problem. "Hidden Node" is a situation in which two stations are within range of the same wireless access point/router, but are not within range of each other. Therefore, they are hidden nodes for each other. When a station starts data transmission with the Wireless-G Router, it might not notice that the other station is already using the wireless medium. When these two stations send data at the same time, they might collide when arriving simultaneously at the Wireless-G Router. The collision will most certainly result in a loss of messages of both stations. If the "Hidden Node" problem is an issue, please specify the packet size. The RTS mechanism will be activated if the data size exceeds the value you set. The default value is 2347.
- **Beacon Interval:** Beacon interval is the amount of time between beacon transmissions. Before a station enters power save mode, the station needs the beacon interval to know when to wake up to receive the beacon (and learn whether there are buffered frames at the wireless router).
- **Data Rate**: By default, it selects the highest rate for transmission.
- **Preamble Type**: A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter. In a "noisy" network environment, the Preamble Type should be set to Long Preamble. The Short Preamble is intended for applications where minimum overhead and maximum performance is desired.
- **Broadcast SSID**: Select enabled to allow all the wireless stations to detect the SSID of this wireless router.
- **IAPP**: The Inter-Access Point Protocol (IAPP) can extend multi-vendor interoperability to the roaming function.
- **802.11g Protection**: there are CCK and OFDM modulation scheme using for 802.11b and 802.11g respectively, the packet collision will increase when these two kind devices exist at the same time. We need to enable the Protection mode to increase the performance.
- **Apply Changes**: Click on "Apply Changes" to save the setting.
- **Reset:** Click on "Reset" button to undo your changes.
- **Help**: To request help information.

3.4.3 Security

Here you can define the security type and level of your wireless network. Selecting different method will enable you to have different level of security. **Please note that using any encryption may be a significant degradation of the data throughput on the wireless link**. There are five Encryption types: "None", "WEP", "WPA(TKIP)", "WPA2(AES)", and "WPA2 Mixed".

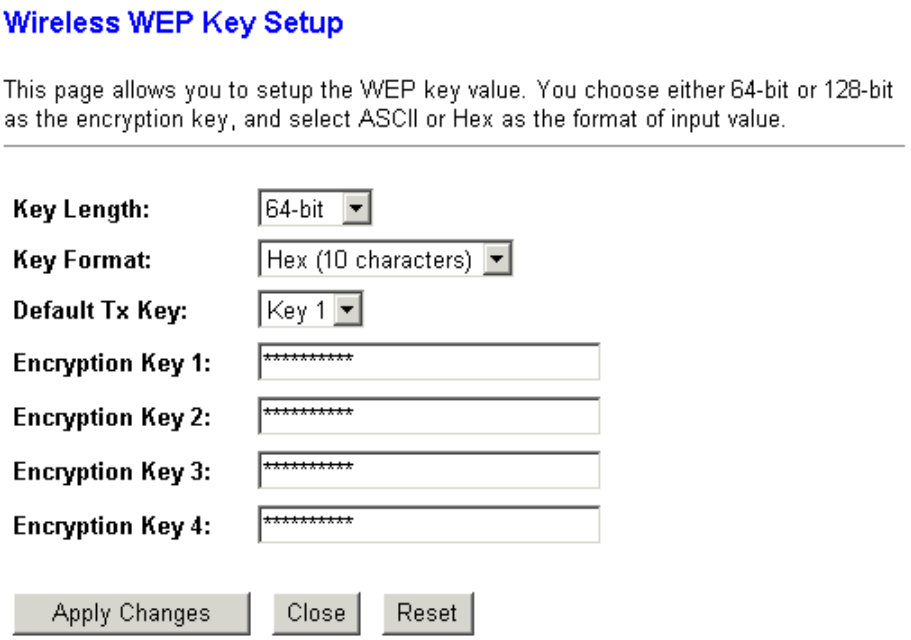


- **Encryption: "None"** means no encryption being selected. Users can enable the 802.1x Authentication and set the RADIUS server authentication parameters – port, IP address and Password.
- **Use 802.1x Authentication**: It is a port access protocol for protecting networks via authentication. If a wireless user is authenticated via 802.1x for network access, a virtual port is opened on the access point allowing for communication. If not successfully authorized, a virtual port is not made available and communications are blocked.
- **Authentication RADIUS Server:** RADIUS is the Remote Access Dial-In User Service, an Authorization, Authentication, and Accounting (AAA) client-server protocol, which is used when a AAA dial-up client logs in or out of a Network Access Server. Typically, a RADIUS server is used by Internet Service Providers (ISP) to perform AAA tasks. AAA phases are described as follows:
  - Authentication phase: Verifies a user name and password against a local database. After the credentials are verified, the authorization process begins.
  - Authorization phase: Determines whether a request is allowed access to a resource. An IP address is assigned for the Dial-Up client.
  - Accounting phase: Collects information on resource usage for the purpose of trend analysis, auditing, session time billing, or cost allocation

  You must enter this RADIUS Server's **Port** number, **IP address** and **Password** correctly.
- **Apply Changes**: Click on "Apply Changes" to save the setting.
- **Reset:** Click on "Reset" button to undo your changes.
- **Help**: To request help information.

- **Encryption:** Select "**WEP**" (Wired Equivalent Privacy) encryption type.
- **Set WEP Key:** Only valid if not select "**Use 802.1x Authentication**" is not selected.
- **Use 802.1x Authentication**: When this feature is enable, please enter the parameters of "**RADIUS Server**" and select the encryption length to be "**WEP 64bits**" or "**WEP 128bits**".
- **Authentication RADIUS Server:** You must enter this RADIUS Server's **Port** number, **IP address** and **Password** correctly.
- **Apply Changes**: Click on "Apply Changes" to save the setting.
- **Reset:** Click on "Reset" button to undo your changes.
- **Help**: To request help information.

When you click on "Set WEP Key", the **Wireless WEP Key Setup** window will display as below:



- **Key Length**: You can choose either 64-bit or 128-bit as the encryption key.
- **Key Format**: You can select hexadecimal or ASCII mode as the format of input value.
- **Default Tx Key**: You can select the default encryption Key (Key1 to Key4) being transmitted.
- **Encryption Key 1**: enter any key code for this Encryption Key 1.
- **Encryption Key 2**: enter any key code for this Encryption Key 2.
- **Encryption Key 3**: enter any key code for this Encryption Key 3.
- **Encryption Key 4**: enter any key code for this Encryption Key 4.
- **Apply Changes**: Click on “Apply Changes” to save the setting.
- **Close**: To close this window.
- **Reset:** Click on “Reset” button to undo your changes.
- **Help**: To request help information.

Wireless Security Setup

This page allows you to setup the wireless security. Turn on WEP or WPA by using Encryption Keys can prevent any unauthorized access to your wireless network.

Encryption: WPA (TKIP) Set WEP Key

Use 802.1x Authentication WEP 64bits WEP 128bits

WPA Authentication Mode: Enterprise (RADIUS) Personal (Pre-Shared Key)

Pre-Shared Key Format: ASCII

Pre-Shared Key:

Enable Pre-Authentication

Authentication RADIUS Server: Port 1812 IP address

Password

Note: When encryption WEP is selected, you must set WEP key value.

Apply Changes Reset Help

Wireless Security Setup

This page allows you to setup the wireless security. Turn on WEP or WPA by using Encryption Keys can prevent any unauthorized access to your wireless network.

Encryption: WPA2(AES) Set WEP Key

Use 802.1x Authentication WEP 64bits WEP 128bits

WPA Authentication Mode: Enterprise (RADIUS) Personal (Pre-Shared Key)

Pre-Shared Key Format: ASCII

Pre-Shared Key:

Enable Pre-Authentication

Authentication RADIUS Server: Port 1812 IP address

Password

Note: When encryption WEP is selected, you must set WEP key value.

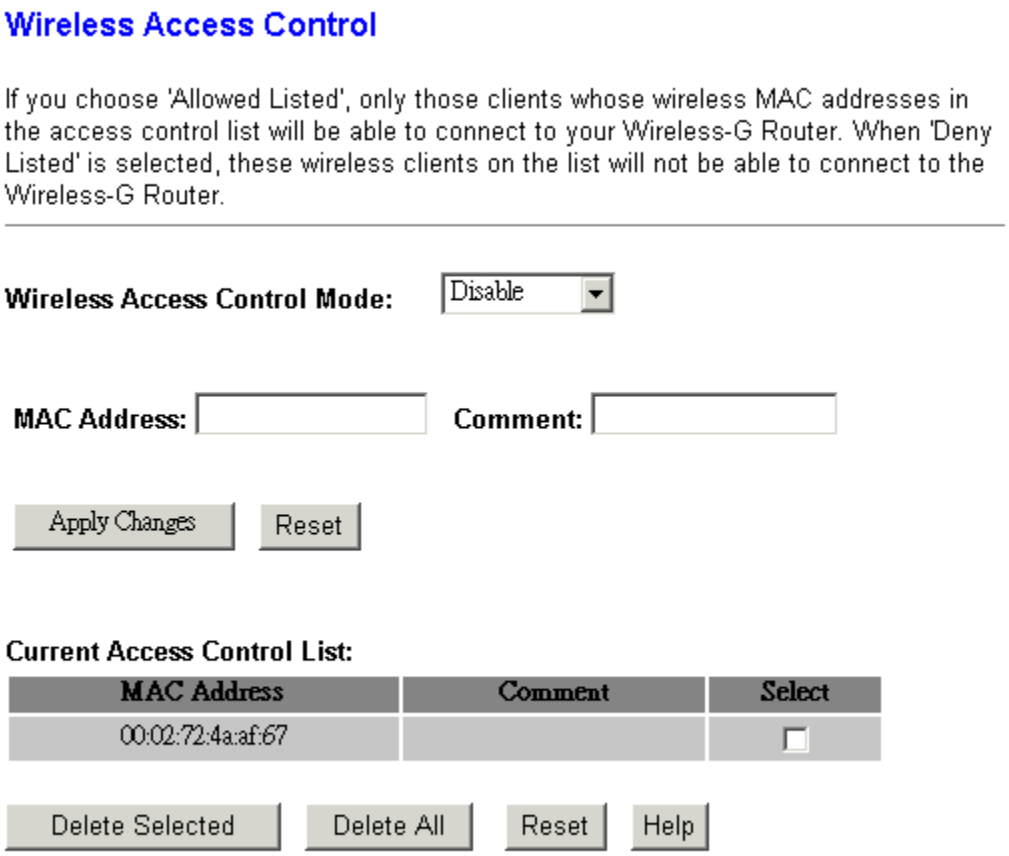
Apply Changes Reset Help

- **Encryption: "WPA"** stands for Wi-Fi Protected Access. There are three encryption modes – **TKIP**, **AES** and **Mixed**.
  - **TKIP**: Temporal Key Integrity Protocol
  - **AES**: Advanced Encryption Standard
  - **Mixed**: WPA2 Mixed mode operation permits the coexistence of WPA and WPA2 clients on a common SSID. WPA2 Mixed Mode is a Wi-Fi Certified feature. During WPA2 Mixed Mode, the Wireless-G Router advertises the encryption ciphers (TKIP, CCMP, other) that are available for use. The client selects the encryption cipher it would like to use and the selected encryption cipher is used for encryption between the client and Wireless-G Router once it is selected by the client. The Wireless-G Router must support WPA2 Mixed Mode to use this option.
- **WPA Authentication Mode**: There are two authentication modes, one is WPA **Enterprise By RADIUS** server and the other one is WPA **Personal Pre-Shared Key**.
- **RADIUS Server**: When user chooses RADIUS authentication, there are three parameters of RADIUS server being set – Port, IP address and Password.
- **Pre-Shared Key**: When user chooses Pre-Shared Key authentication, there are two types of input format – Passphrase and Hex.
- **Enable Pre-Authentication**: Only valid for AES and Mixed mode. When user chooses **Enterprise (RADIUS)**, allow the radius server to do the previous authentication process.
- **Apply Changes**: Click on "Apply Changes" to save the setting.
- **Reset:** Click on "Reset" button to undo your changes.
- **Help**: To request help information.

3.4.4 Access Control

Access Control allows user to block or unblock any wireless client to access this router. Users can add new MAC address with simple comment and then click on "Apply Changes" button to apply. To delete a MAC address, select its corresponding checkbox under the **Select** column and click on

“Delete Selected” button.

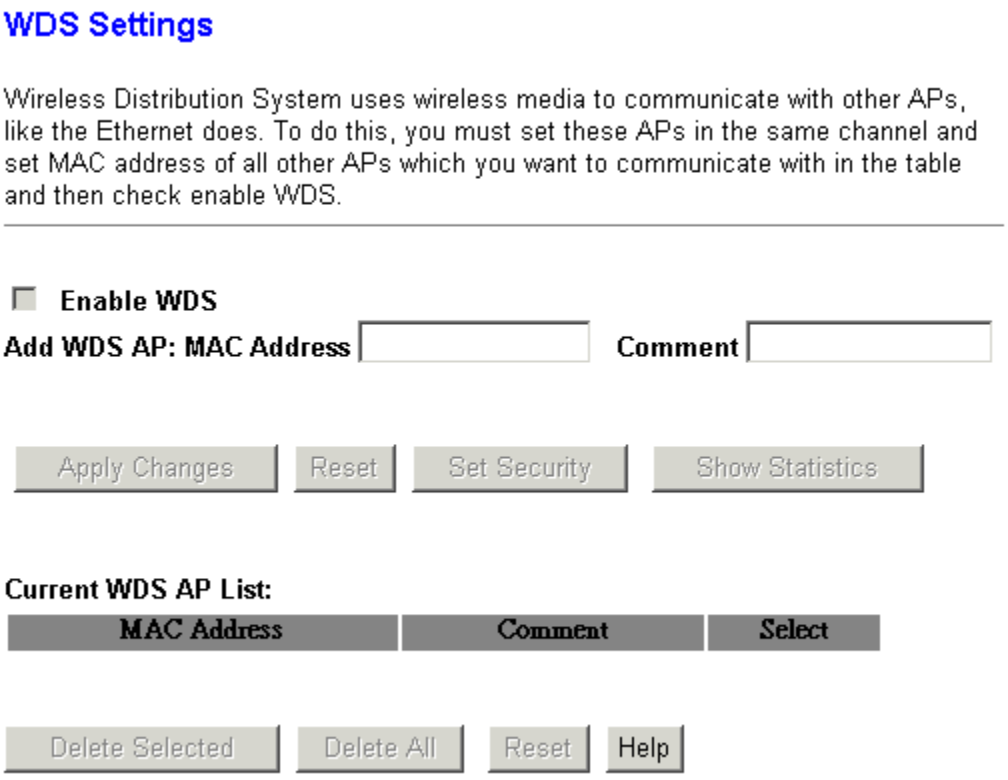

Wireless Access Control
If you choose 'Allowed Listed', only those clients whose wireless MAC addresses in the access control list will be able to connect to your Wireless-G Router. When 'Deny Listed' is selected, these wireless clients on the list will not be able to connect to the Wireless-G Router.
Wireless Access Control Mode:
Disable
MAC Address:
Comment:
Apply Changes
Reset
Current Access Control List:
MAC Address
Comment
Select
00:02:72:4a:af:67
Delete Selected
Delete All
Reset
Help

- **Wireless Access Control Mode**: There are three types of access control options:
  - **Disable**: disable this control feature.
  - **Allow Listed**: If you choose “Allow Listed”, only those clients whose wireless MAC addresses are in the access control list will be able to connect to your Wireless-G Router.
  - **Deny Listed**: When “Deny Listed” is selected, these wireless clients on the list will not be able to connect to the Wireless-G Router.
- **MAC Address**: you need to fill out the client's MAC address which you want to allow or deny.
- **Comment:** you can add any comment in this blank.
- **Apply Changes** button: when you fill up the MAC address and Comment, you need to press this button then this information will be added to the **Current Access Control List**..
- **Delete Selected** button: delete the selected client.
- **Delete All** button: delete all the WDS AP those are in the **Current Access Control List**.
- **Reset** button: to clear all the input in the blank.
- **Help**: To request help information.

3.4.5 WDS

When you enable the WDS feature selected in the Basic Settings, this Wireless Distribution System (WDS) feature will set this Wireless-G Router in “Bridge Mode”. Two Wireless-G Routers in bridge mode can communicate with each other through wireless interface. To do this, you must

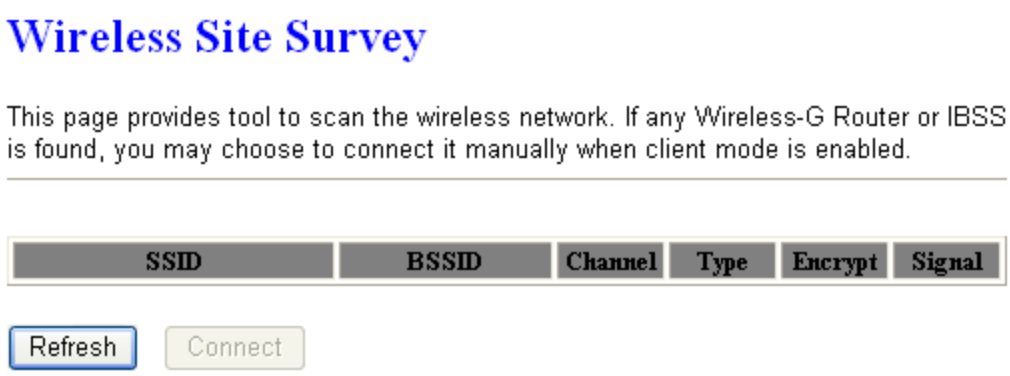
set these Wireless-G Routers in the same channel and set MAC address of all other Wireless-G Routers which you want to communicate with in the table and then enable the WDS.


WDS Settings
Wireless Distribution System uses wireless media to communicate with other APs, like the Ethernet does. To do this, you must set these APs in the same channel and set MAC address of all other APs which you want to communicate with in the table and then check enable WDS.
Enable WDS
Add WDS AP: MAC Address
Comment
Apply Changes
Reset
Set Security
Show Statistics
Current WDS AP List:
MAC Address
Comment
Select
Delete Selected
Delete All
Reset
Help

- **Enable WDS**: enable the WDS function.
- **Add WDS AP**: you need to fill out the other AP's MAC address which you want to communicate.
- **Comment:** you can add any comment in this blank.
- **Apply Changes** button: when you fill up the MAC address and Comment, you need to press this button then this information will be added to the **Current WDS AP List**..
- **Reset** button: to clear all the input in the blank.
- **Set Security** button: allow you to setup the wireless security for WDS.
- **Show Statistics** button: show the MAC address, transmission and receiption packet counters for each configured WDS AP.
- **Current WDS AP List**: A table shows the current WDS AP's information that includes MAC address and comment.
- **Delete Selected** button: delete the selected WDS AP.
- **Delete All** button: delete all the WDS AP those are in the **Current WDS AP List**.
- **Reset:** Click on "Reset" to undo your changes.
- **Help**: To request help information.

3.4.6 Site Survey

This Wireless Site Survey tool will scan all available wireless network. Click on "**Refresh**" button to search for available Wireless-G Router(s) or IBSS(s). If any Wireless-G Router or IBSS is found, you may choose to connect it manually when client mode is enabled.

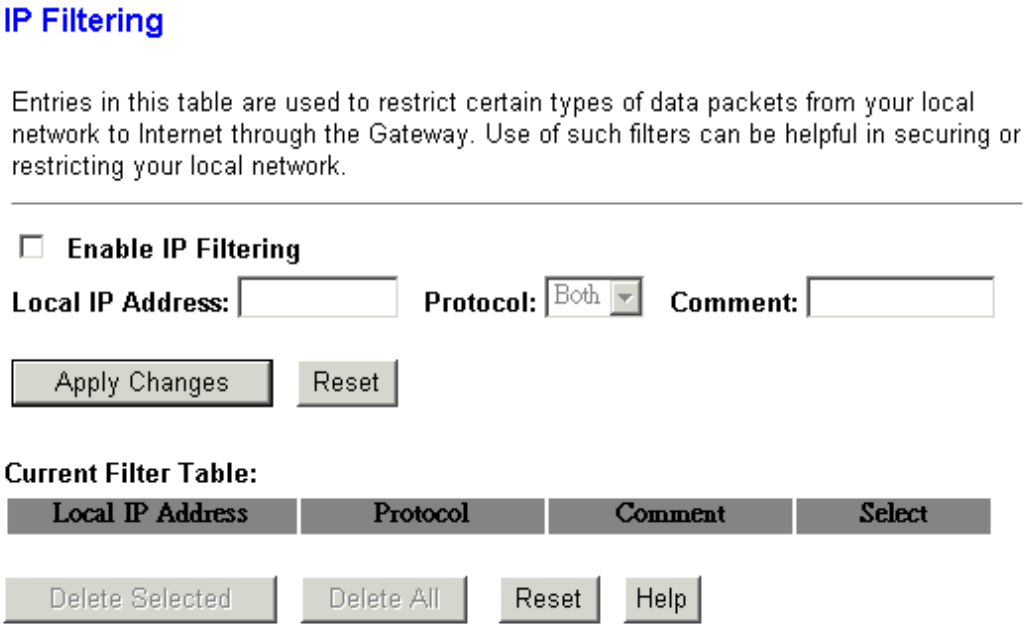

Wireless Site Survey
This page provides tool to scan the wireless network. If any Wireless-G Router or IBSS is found, you may choose to connect it manually when client mode is enabled.
SSID
BSSID
Channel
Type
Encrypt
Signal
Refresh
Connect

- **Show Client** button: A table shows the assigned IP address, MAC address and time expired for each DHCP leased client.

3.5 Firewall

3.5.1 IP Filtering

You can set up the filter against the IP addresses to block specific users from accessing the Internet.

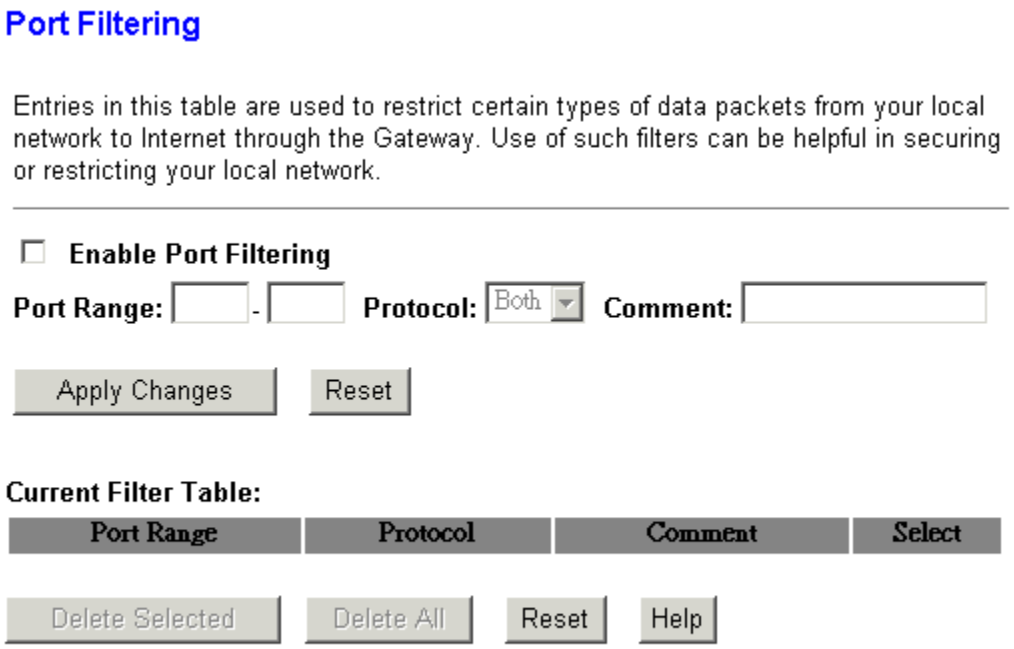


- **Enable IP Filtering**: Enable the IP Filtering function.
- **Local IP Address**: Enter the private IP address that you want to block accessing the Internet.
- **Protocol**: This allows you to select UDP, TCP or both protocol types you want to block.
- **Comment**: Allow user to add any description to this Local IP Address.
- **Apply Changes**: Click on “Apply Changes” to save the setting.
- **Current Filter Table**: A table shows the current IP Address filtering.
- **Delete Selected**: Allow user to delete any Local IP Address in the **Current Filter Table**.

- **Delete All**: Allow user to delete all Local IP Address in the **Current Filter Table.**
- **Reset:** Click on “Reset” to undo your changes.
- **Help**: To request help information.

3.5.2 Port Filtering

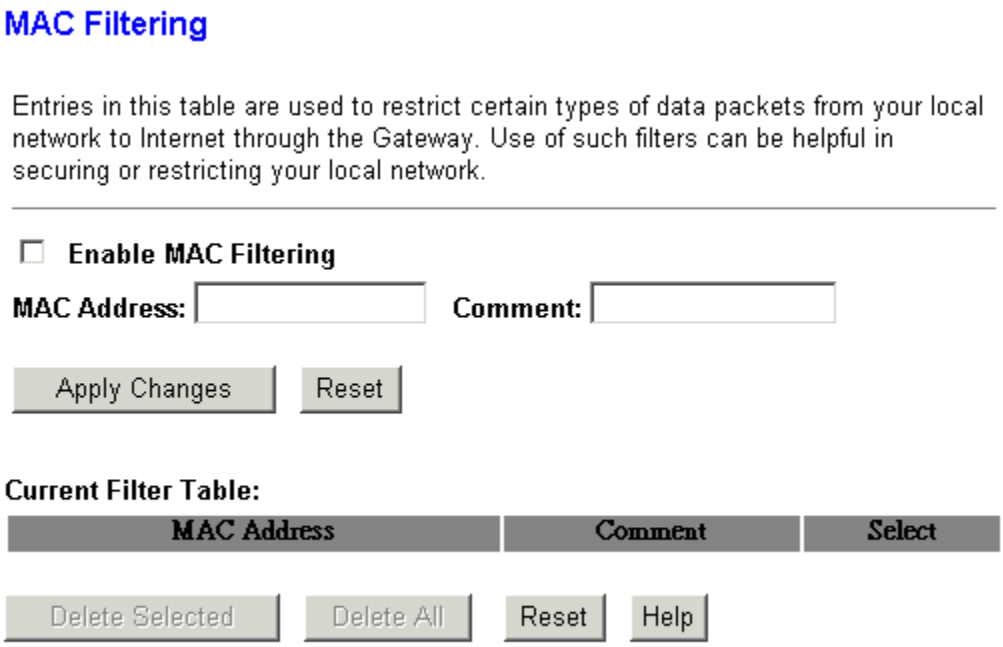
The Port filtering can restrict certain type of data packets from your LAN to Internet through the router.



- **Enable Port Filtering**: Enable the Port Filtering function.
- **Port Range**: Enter the Port range 1 to 65535 those you want to block accessing the Internet.
- **Protocol**: This allows you to select UDP, TCP or both protocol types you want to block.
- **Comment**: Allow user to add any description to this port range.
- **Apply Changes**: Click on “Apply Changes” to save the setting.
- **Current Filter Table**: A table shows the current port filtering.
- **Delete Selected**: Allow user to delete any port range in the **Current Filter Table**.
- **Delete All**: Allow user to delete all the port range in the **Current Filter Table.**
- **Reset:** Click on “Reset” to undo your changes.
- **Help**: To request help information.

3.5.3 MAC Filtering

You can set up the filter against the MAC addresses to block specific users from accessing the Internet.


MAC Filtering
Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.
Enable MAC Filtering
MAC Address:
Comment:
Apply Changes
Reset
Current Filter Table:
MAC Address
Comment
Select
Delete Selected
Delete All
Reset
Help

- **Enable MAC Filtering**: Enable the MAC Filtering function.
- **MAC Address**: Enter the MAC Address that you want to block accessing the Internet.
- **Comment**: Allow user to add any description to this MAC Address.
- **Apply Changes**: Click on “Apply Changes” to save the setting.
- **Current Filter Table**: A table shows the current MAC Address filtering.
- **Delete Selected**: Allow user to delete any MAC Address in the **Current Filter Table**.
- **Delete All**: Allow user to delete all MAC Address in the **Current Filter Table.**
- **Reset:** Click on “Reset” to undo your changes.
- **Help**: To request help information.

3.6 VPN Settings

Virtual Private Network (VPN), is a connection between two end points. It establishes a private network and allows private data to be sent securely over the Internet. This is called as “creating a tunnel”.

VPN Setup

This page is used to enable/disable VPN function and select a VPN connection to edit/delete.

☑ Enable IPSec VPN ☐ Enable NAT Traversal [Generate RSA Key]

[Apply Changes] [Show RSA Public Key]

Current VPN Connection Table: WAN IP:0.0.0.0

	#	Name	Active	Local Address	Remote Address	Remote Gateway	Status
◉	1	-	-	-	-	-	-
○	2	-	-	-	-	-	-
○	3	-	-	-	-	-	-
○	4	-	-	-	-	-	-
○	5	-	-	-	-	-	-
○	6	-	-	-	-	-	-
○	7	-	-	-	-	-	-
○	8	-	-	-	-	-	-
○	9	-	-	-	-	-	-
○	10	-	-	-	-	-	-

[Edit] [Delete] [Refresh] [Help]

- **Enable IPSec VPN**: to enable IPSec VPN function.
- **Enable NAT Traversal**: enable this function to detect NAT gateways between IIPSec hosts and to negotiate the use of UDP encapsulation of IPSec packets.
- **Generate RSA Key**: here you can generate a new public key.
- **Show RSA Public Key**: to show the new public key.

RSA Key

This page is used to show RSA key.

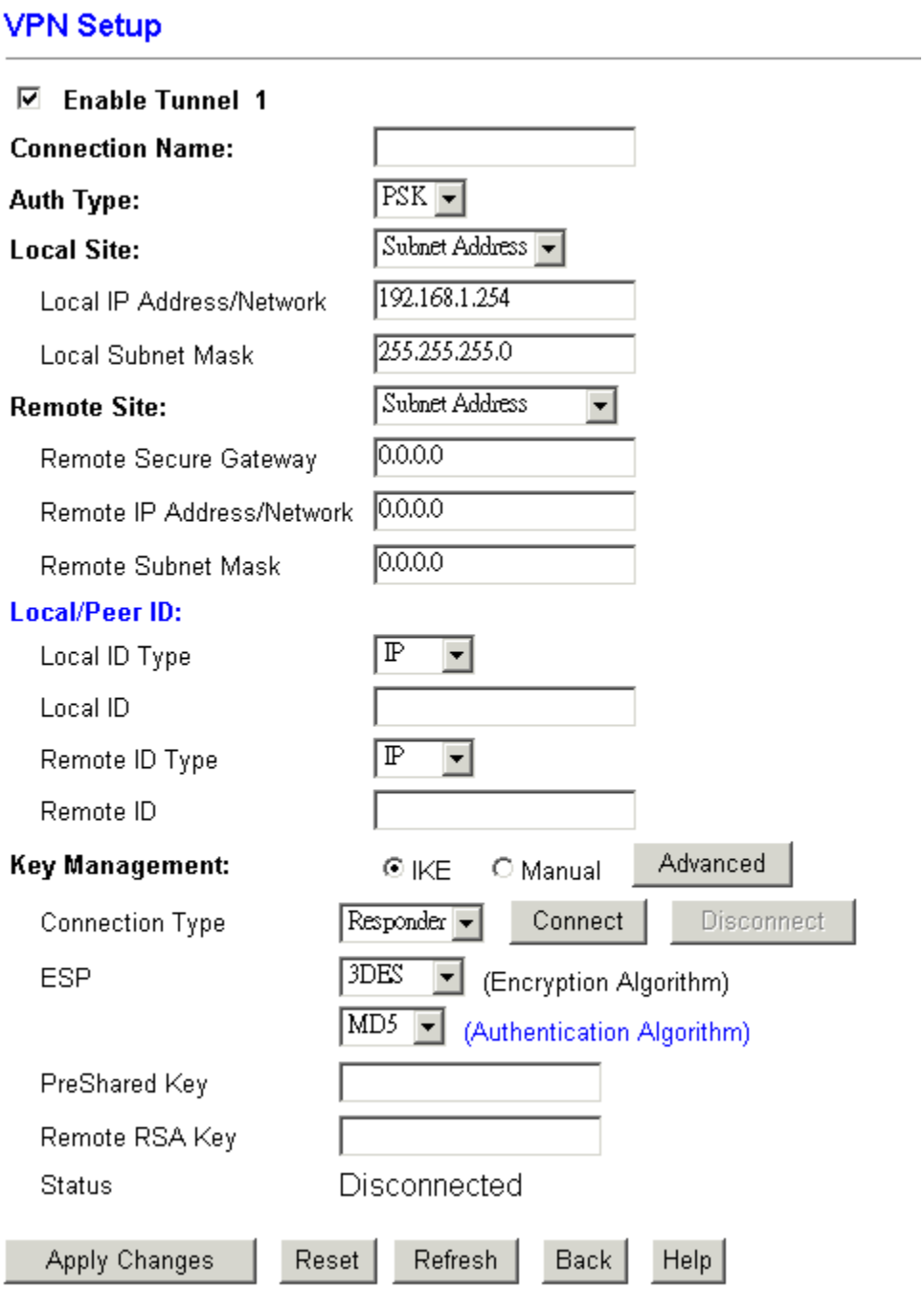
Current RSA Key :

0sAQOEOS0RCQl7axOUuVMk+WD7imVb8XiwwmVU+JucYLO+2MmD+kxF8Dc3HQJfu0w

[Close]

- **Current VPN Connection Table**: a table shows the current VPN connection status.
- **Edit**: you can edit any VPN connection in the **Current VPN Connection Table**.
- **Delete**: you can delete any VPN connection in the **Current VPN Connection Table**.
- **Refresh**: to update the **Current VPN Connection Table**.
- **Show Log**: to show the internal process of building VPN.
- **Help**: To request help information.

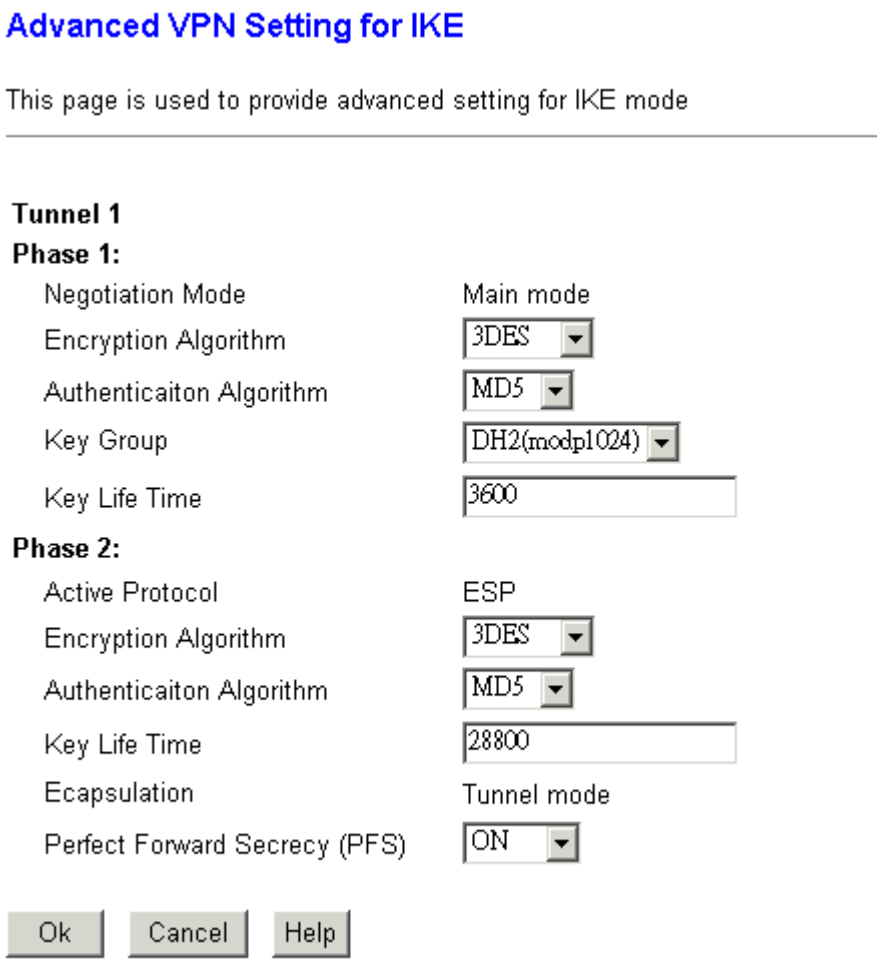
When you click on the **Edit** button, the **VPN Setup** window will display as below:



- **Enable Tunnel 1**: Enable the IPSec VPN tunnel.
- **Connection Name**: Specify a name for the VPN connection.
- **Auth Type**: Allow user to choice the method of authenticating gateways for Diffie-Hellman key negotiation.
- **Local Site**: You can select the **Single Address** or **Subnet Address** for the secured local IP.
- **Local IP Address/Network**: Enter IP address for the local network for VPN connection.
- **Local Subnet Mask:** Enter subnet mask the local network for VPN connection.
- **Remote Site:** You can select the **Single Address, Subnet Address, Any Address** or **NAT-T Any Address** for the secured remote IP.

- **Remote Secure Gateway:** Enter remote site gateway.
- **Remote IP Address/Network**: Enter remote site IP Address (for **Single Address**) or IP network (for **Subnet Address)**.
- **Remote Subnet Mask:** Enter remote site subnet mask.
- **Local ID Type**: Specify the local ID type, which is supported IP, DNS and Email.
- **Local ID**: Specify a local ID to be used for setup VPN connection.
- **Remote ID Type**: Specify the remote ID type, which is supported IP, DND and Email.
- **Remote ID**: Specify a remote ID to be used for setup VPN connection.
- **Key Management**: there are two key management methods – IKE and Manual.
- **Connection Typ**e: there are two connection types – Initator and Responder.
- **ESP**: ESP (Encrypts Security Payload) with authentication can encrypt security payload and authenticated for encryption service.
- **PreShared Key**: Specify a key for IKE (Internet Key Exchange)
- **Remote RSA Key**: Allow user to choice the method of authenticating gateways for Diffie-Hellman key negotiation.
- **Status**: Show the current connection status.
- **Advanced**: Advance VPN setup for IKE.
- **Connect**: To active the VPN connection.
- **Disconnect**: To inactive the VPN connection.
- **Apply Changes**: Click on “Apply Changes” to save the setting.
- **Reset:** Click on “Reset” to undo your changes.
- **Refresh**: to update the Current VPN Connection **Status**.
- **Back**: go back to the **VPN Setup** page.
- **Help**: To request help information.

When you select to set the key management manually, you have to click on the **Advanced** button, the **Advanced VPN Settings** for IKE web page will display



Phase 1

- **Negotiation Mode**: This negotiation is a main process to build a VPN connection in phase 1.
- **Encryption Algorithm**: There are two encryption algorithm – 3DES and AES128.
- **Authentication Algorithm**: There are two authentication algorithm – MD5 and SHA1.
- **Key Group**: There are three Key groups to be defined – DH1, DH2 and DH5.
- **Key Life Time**: Define the life time for this key.

Phase 2

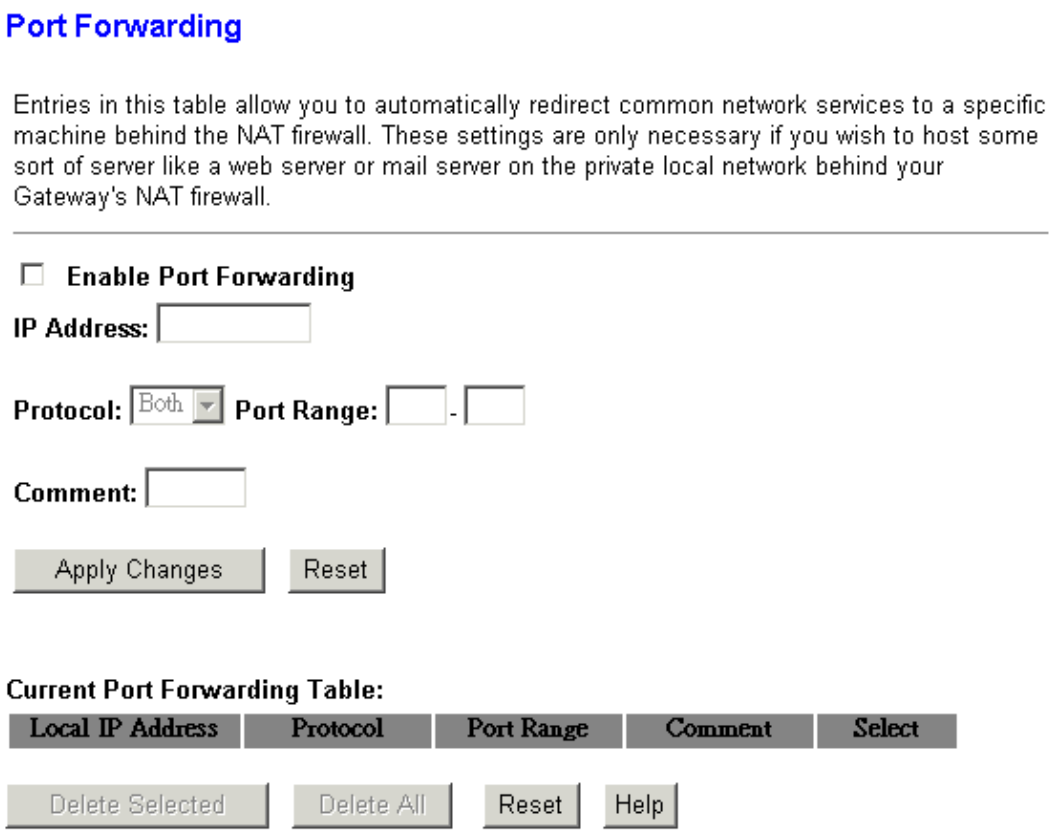
- **Active Protocol**: The ESP protocol is using to build a VPN connection in phase 2
- **Encryption Algorithm**: There are three encryption algorithm – 3DES, AES128 and Null.
- **Authentication Algorithm**: There are two authentication algorithm – MD5 and SHA1.
- **Key Life Time**: Define the life time for this key.
- **Encapsulation**: Show the current encapsulation mode.
- **Perfect Forward Secrecy (PFS)**: A key-establishment protocol, used to secure VPN communications. If one encryption key is compromised only data encrypted by that specific key is compromised. For perfect forward secrecy (PFS) to exist the key used to protect transmission of data must not be used to derive any additional keys. You can turn on this PFS feature.
- **OK**: Click on “OK” to confirm the setting.
- **Cancel**: Click on “Cancel” to skip the setting on this page.

- **Help**: To request help information.

3.7 Advanced

3.7.1 Port Forwarding

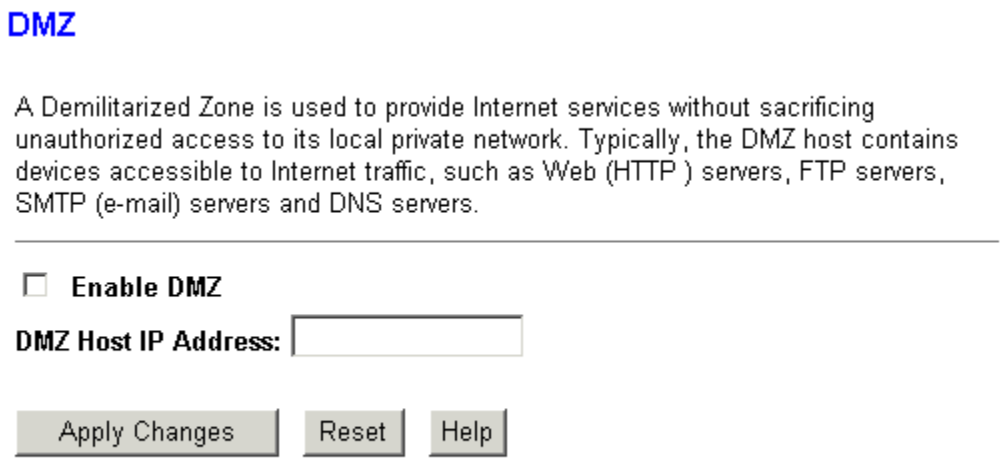
The Port Forwarding allows you to re-direct a particular range of service port numbers (from the WAN port) to a particular LAN IP address. It helps you to host some servers behind the router's NAT firewall.


Port Forwarding
Entries in this table allow you to automatically redirect common network services to a specific machine behind the NAT firewall. These settings are only necessary if you wish to host some sort of server like a web server or mail server on the private local network behind your Gateway's NAT firewall.
Enable Port Forwarding
IP Address:
Protocol: Both
Port Range: -
Comment:
Apply Changes
Reset
Current Port Forwarding Table:
Local IP Address
Protocol
Port Range
Comment
Select
Delete Selected
Delete All
Reset
Help

- **Enable Port Forwarding**:
- **IP Address**: This is the private IP of the server behind the NAT firewall.
  (Note: You need to give your LAN PC clients a fixed/static IP address for Port Forwarding to work properly.)
- **Protocol**: This is the protocol type to be forwarded. You can choose to forward "TCP" packet, "UDP" packet or "Both" (TCP + UDP).
- **Port Range**: The range of ports to be forward to the private IP.
- **Comment**: Allow user to add any description to this Port Forwarding.
- **Apply Changes**: Click on "Apply Changes" to save the setting.
- **Current Port Forwarding Table**: A table shows the current Port Forwarding settings.
- **Delete Selected**: Allow user to delete any Port Forwarding settings in the **Current Port Forwarding Table**.
- **Delete All**: Allow user to delete all Port Forwarding settings in the **Current Port Forwarding Table.**
- **Reset:** Click on "Reset" to undo your changes.
- **Help**: To request help information.

3.7.2 DMZ

DMZ feature allows one local user to be exposed to the Internet for use of a special-purpose service such as Internet gaming or videoconferencing. It will forward all the ports at the same time to one PC. The port forwarding feature is more secure because it only opens the ports you want to have opened, while DMZ opens all the ports of one computer, exposing the computer so the Internet can see it.

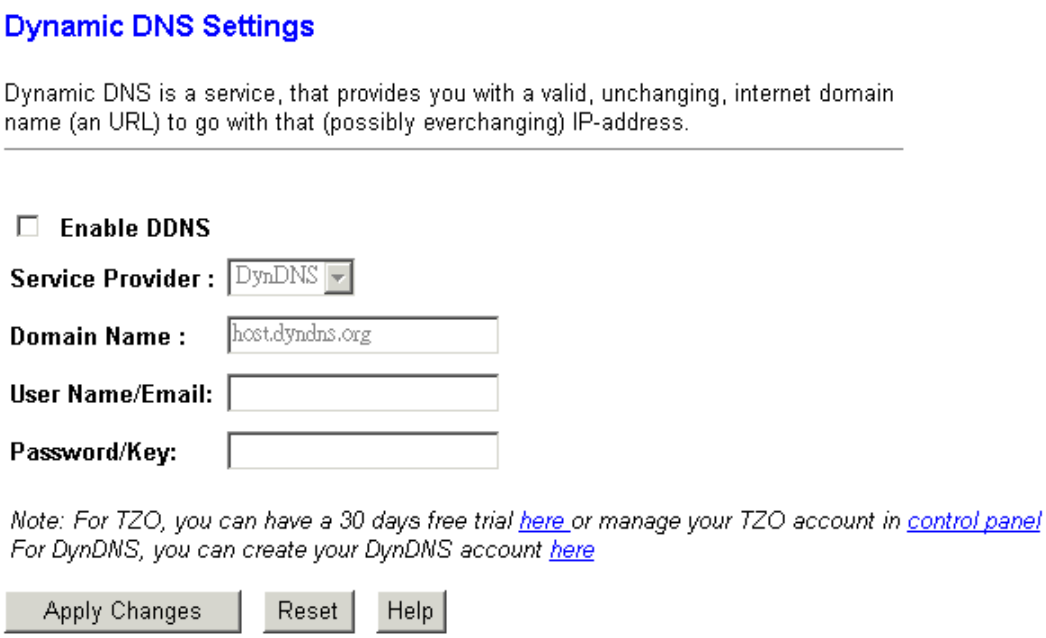

DMZ
A Demilitarized Zone is used to provide Internet services without sacrificing unauthorized access to its local private network. Typically, the DMZ host contains devices accessible to Internet traffic, such as Web (HTTP) servers, FTP servers, SMTP (e-mail) servers and DNS servers.
Enable DMZ
DMZ Host IP Address:
Apply Changes
Reset
Help

- **Enable DMZ**: Enable one PC to be exposed to the Internet.
- **DMZ Host IP Address**: Enter the computer's IP address in this field.
  (Note: You need to give your LAN PC clients a fixed/static IP address for DMZ to work properly.)
- **Apply Changes**: Click on "Apply Changes" to save the setting.
- **Reset:** Click on "Reset" to undo your changes.
- **Help**: To request help information.

3.7.3 DDNS

You can assign a fixed host and domain name to a dynamic Internet IP address. Each time the router boots up, it will re-register its domain-name-to-IP-address mapping with the DDNS service provide. This is the reason that Internet users can access the router through a domain name instead of its IP address.

(Note: make sure that you have registered with a DDNS service provider before enabling this feature.)

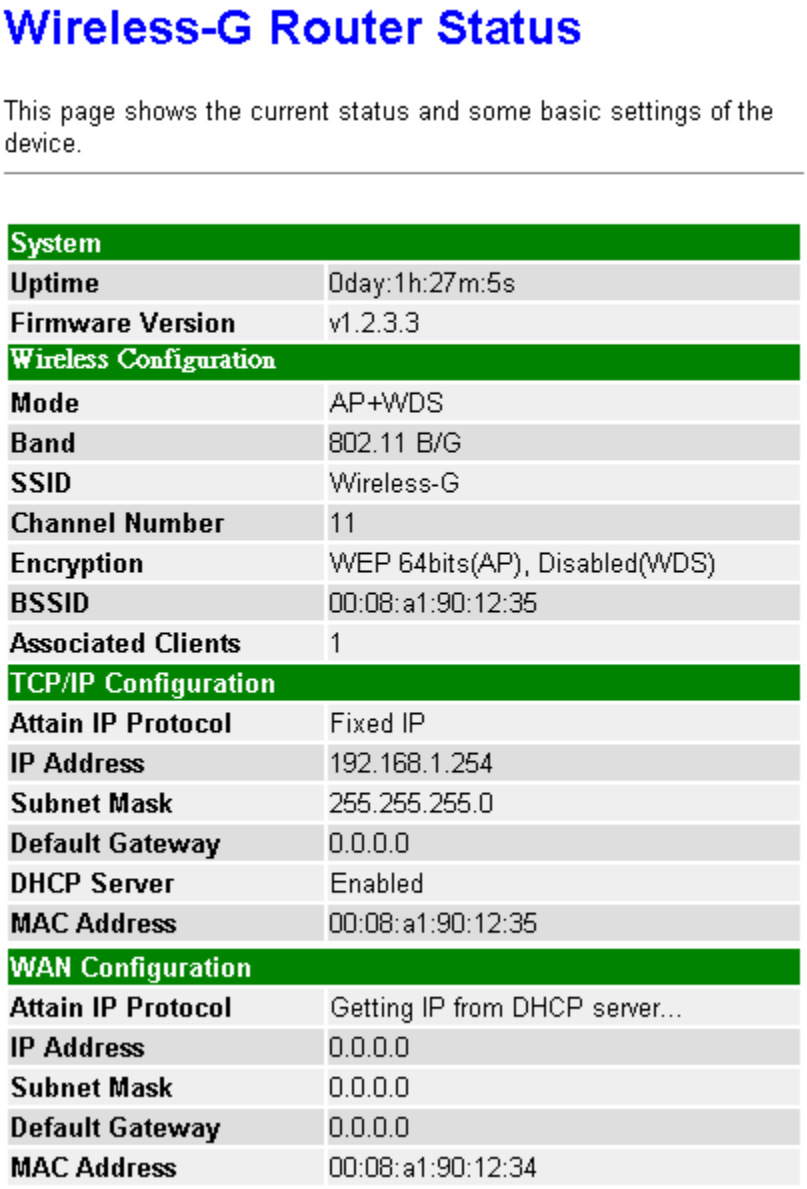

Dynamic DNS Settings
Dynamic DNS is a service, that provides you with a valid, unchanging, internet domain name (an URL) to go with that (possibly everchanging) IP-address.
Enable DDNS
Service Provider :
DynDNS
Domain Name :
host.dyndns.org
User Name/Email:
Password/Key:
Note: For TZO, you can have a 30 days free trial here or manage your TZO account in control panel
For DynDNS, you can create your DynDNS account here
Apply Changes
Reset
Help

- **Enable DDNS**: Enable this DDNS function.
- **Service Provider**: Select the DDNS Service Provider.
- **Domain Name**: Enter the Service Provider Domain Name if needed.
- **Username/Email:** Enter the user name or Email address required to log into the DDNS account
- **Password/Key**: Enter the password or Key number required to log into the DDNS account.
- **Apply Changes**: Click on “Apply Changes” to save the setting.
- **Reset:** Click on “Reset” to undo your changes.
- **Help**: To request help information.

3.8 Management

3.8.1 Status

This status page provides a brief read-only report for system, LAN and WAN configuration information. The data displayed may be changed depending on your current configuration.



Wireless-G Router Status

This page shows the current status and some basic settings of the device.

System	
Uptime	0day:1h:27m:5s
Firmware Version	v1.2.3.3
Wireless Configuration	
Mode	AP+WDS
Band	802.11 B/G
SSID	Wireless-G
Channel Number	11
Encryption	WEP 64bits(AP), Disabled(WDS)
BSSID	00:08:a1:90:12:35
Associated Clients	1
TCP/IP Configuration	
Attain IP Protocol	Fixed IP
IP Address	192.168.1.254
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DHCP Server	Enabled
MAC Address	00:08:a1:90:12:35
WAN Configuration	
Attain IP Protocol	Getting IP from DHCP server...
IP Address	0.0.0.0
Subnet Mask	0.0.0.0
Default Gateway	0.0.0.0
MAC Address	00:08:a1:90:12:34

System

- **Uptime**: The date/time shows how long the router power on.
- **Firmware Version**: Show the current firmware version.

Wireless Configuration

- **Mode**: Shows the current operating modes.
- **Band**: Shows the current operating band.
- **SSID**: Shows the current SSID.
- **Channel Number**: Shows the current operating channel.
- **Encryption**: Shows the current encryption mode.
- **BBSID**: Shows the current BBSID on your Wireless LAN port.
- **Associated Clients**: Shows the number of associated clients that you are connecting together.

TCP/IP Configuration

- **Attain IP Protocol**: Shows the IP protocol is being used on LAN
- **IP Address**: Shows the router's LAN port IP address
- **Subnet Mask**: Shows subnet mask on your local network.
- **Default Gateway**: Shows the defined Default Gateway on your local network.

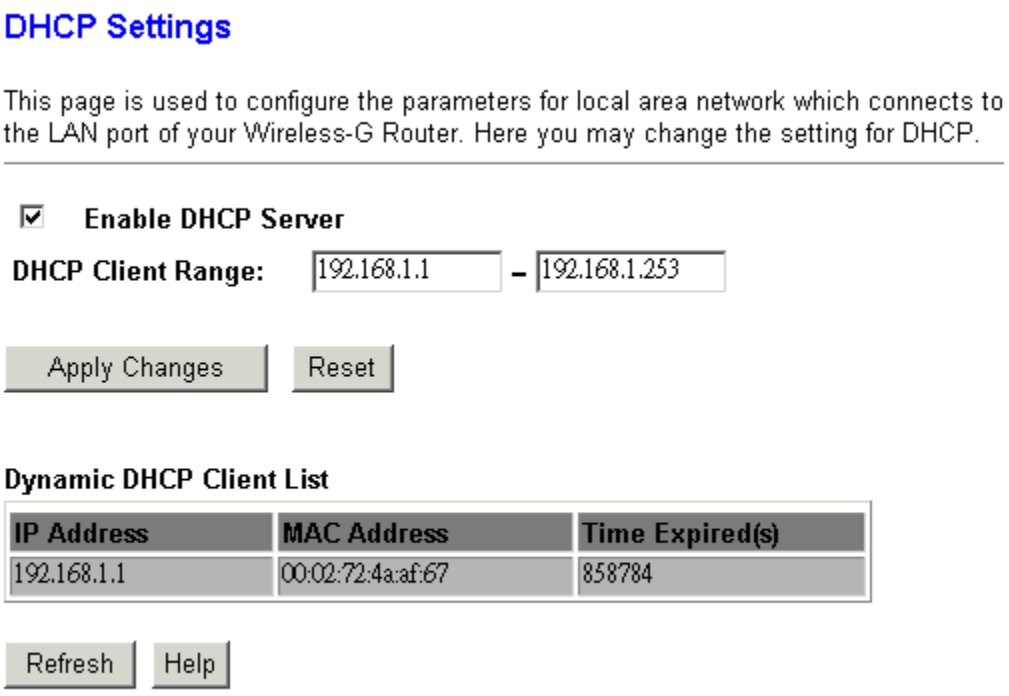
- **DHCP Server**: Shows the DHCP server status.
- **MAC Address**: Shows the MAC address on your LAN port.

WAN Configuration

- **Attain IP Protocol**: Shows the IP protocol is being used on WAN.
- **IP Address**: Shows the router's WAN port IP address
- **Subnet Mask**: Shows subnet mask on your public network.
- **Default Gateway**: Shows the defined Default Gateway on your public network.
- **MAC Address**: Shows the MAC address on your WAN port.

3.8.2 DHCP Settings

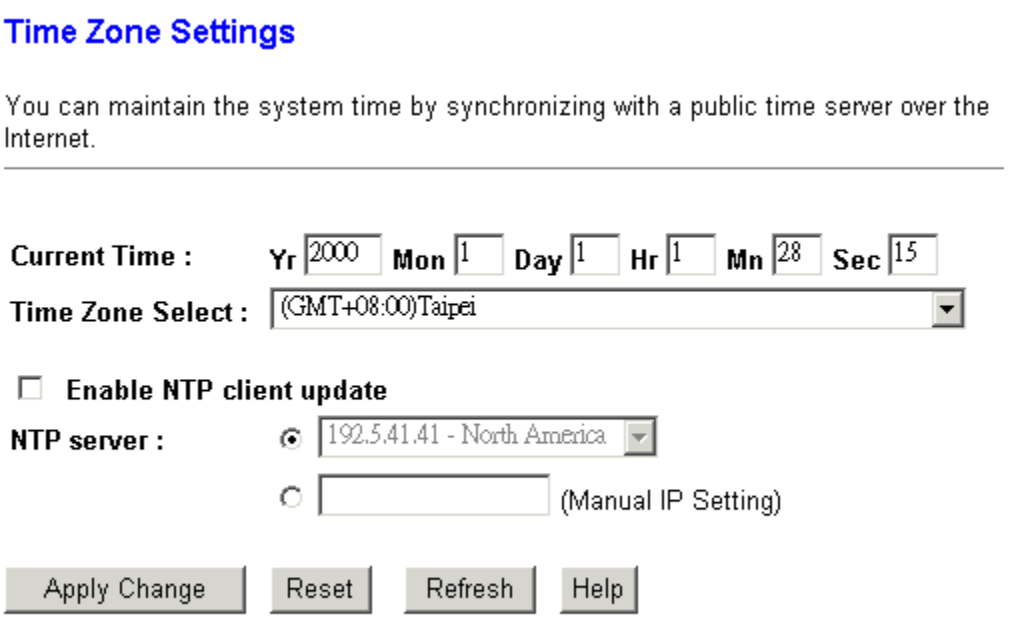
There is a DHCP server running on LAN interface. It serves dynamic IP addresses to LAN hosts running DHCP client. Both dynamic and static DHCP leases are supported. The service is turned on by default.



- **Enable DHCP Server**: Check the checkbox to enable the DHCP Server feature.
- **DHCP Client Range**: Enter the Start / End address that should be assigned by the DHCP server.
- **Apply Changes**: Click on "Apply Changes" to save the setting.
- **Reset:** Click on "Reset" to undo your changes.
- **Refresh:** Click on "**Refresh**" button to update the latest information in the **Dynamic DHCP Client List.**
- **Help**: To request help information.

3.8.3 Time Zone Settings

This wireless router provides a NTP (Network Time Protocol) client that can synchronize time with configured NTP server. Press the Refresh Time button refreshes system timestamp and the Save/Time Sync buttons force NTP client sync time with NTP server.


Time Zone Settings
You can maintain the system time by synchronizing with a public time server over the Internet.
Current Time :
Yr 2000 Mon 1 Day 1 Hr 1 Mn 28 Sec 15
Time Zone Select :
(GMT+08:00)Taipei
Enable NTP client update
NTP server :
192.5.41.41 - North America
(Manual IP Setting)
Apply Change
Reset
Refresh
Help

- **Current Time**: Show the current time of this router.
- **Time Zone Select**: Select the time zone of the country where this router is located.
- **Enable NTP client update**: enable this time zone update function
- **NTP serve**r: you can select the existing NTP server by clicking the down arrow or manually assign time server address.
- **Apply Changes**: Click on “Apply Changes” to save the setting.
- **Reset:** Click on “Reset” to undo your changes.
- **Refresh**: Get the date/time from NTP server again.
- **Help**: To request help information.

3.8.4 Password

Users can change User Name and Password here. The default User Name is “**root**” with Password “**1234**”.

Password Setup
This page is used to set the account to access the web server of Wireless-G Router. Empty user name and password will disable the protection.
User Name:
New Password:
Confirmed Password:
Apply Changes
Reset
Help

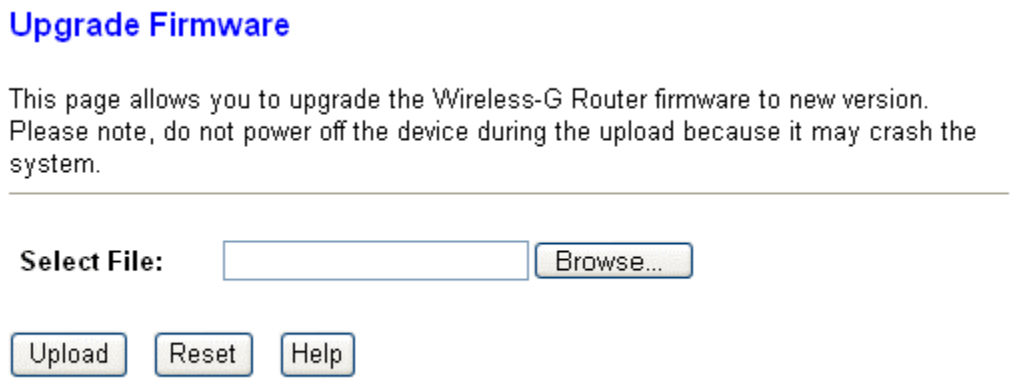
- **User Name**: Enter the new login user name. The user name can contain 1 to 30 characters and/or digits, and are case sensitive. **(Note: if you empty the user**

name, the password login protection will be disable.)

- **New Password**: Enter the new login password. The passwords can contain 1 to 30 characters and/or digits, and are case sensitive.
- **Confirmed Password**: Enter the new login password again.
- **Apply Changes**: Click on “Apply Changes” to save the setting.
- **Reset:** Click on “Reset” to clear all fields.
- **Help**: To request help information.

3.8.5 Upgrade Firmware

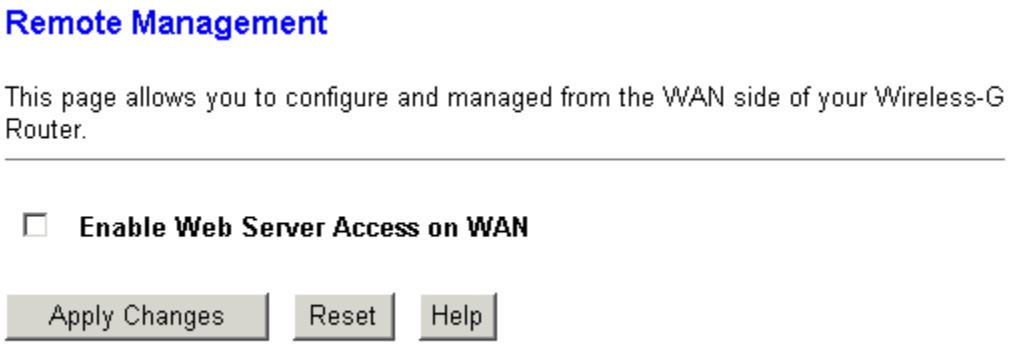
This wireless router allows you to easily upgrade the firmware.
Firmware Upgrade: Click on the **Browse** button to select the firmware and then click on the **Upload** button. After the firmware upgrade is completed, the router will restart automatically.
(Note: Do not power off the device while the firmware is being upgraded.)


Upgrade Firmware
This page allows you to upgrade the Wireless-G Router firmware to new version.
Please note, do not power off the device during the upload because it may crash the system.
Select File:
Browse...
Upload
Reset
Help

- **Select File**: Enter the location and name of the file containing the new firmware. You can use the Browse button next to this filed to browse for the file.
- **Upload**: Click to upgrade the router’s firmware.
- **Reset:** Click on “Reset” to clear the Select File fields.
- **Help**: To request help information.

3.8.6 Remote Management

Users can connect to this router from remote side using this router’s WAN IP. This router’s current WAN IP is shown in the WAN status page.
.

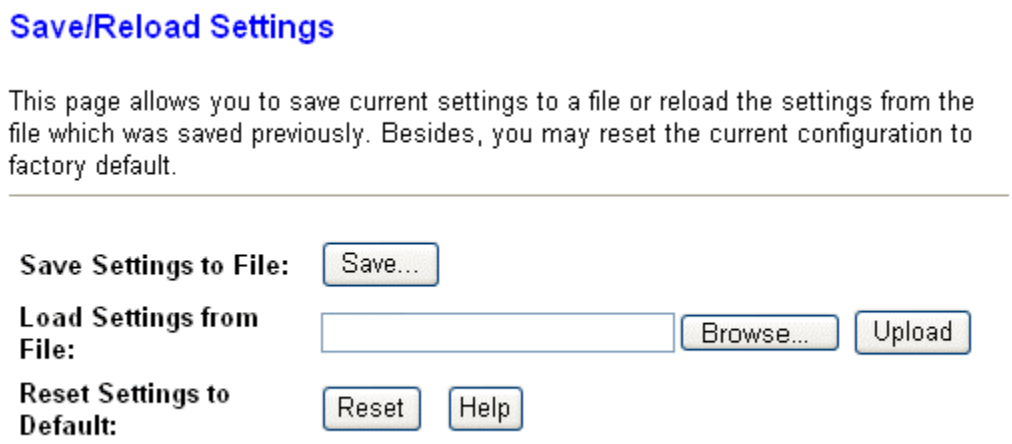

Remote Management
This page allows you to configure and managed from the WAN side of your Wireless-G Router.
Enable Web Server Access on WAN
Apply Changes
Reset
Help

- **Enable Web Server Access on WAN**: Check the checkbox and enable this remote feature.
- **Apply Changes**: Click on “Apply Changes” to save the setting.

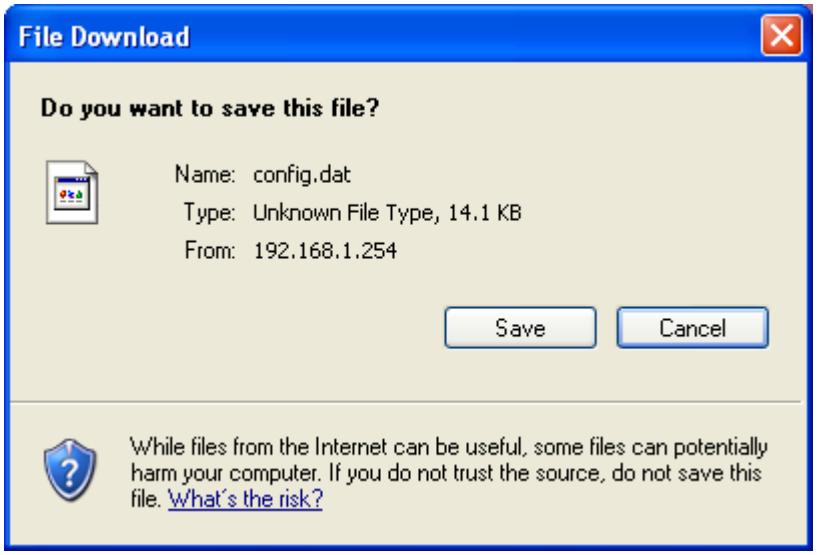
- **Reset:** Click on “Reset” to undo your changes.
- **Help**: To request help information.

3.8.7 Save/Reload Settings

You can create a backup file that contains your current router settings. After you create a backup file, you can use it to restore your settings in the event you need to reset the router’s defaults.


Save/Reload Settings
This page allows you to save current settings to a file or reload the settings from the file which was saved previously. Besides, you may reset the current configuration to factory default.
Save Settings to File:
Save...
Load Settings from File:
Browse...
Upload
Reset Settings to Default:
Reset
Help

- **Save Settings to File**: Click on “**Save”** button to save the settings to a file “config.dat”.


File Download
Do you want to save this file?
Name: config.dat
Type: Unknown File Type, 14.1 KB
From: 192.168.1.254
Save
Cancel
While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not save this file. What's the risk?

- **Load Settings from File**: Enter the location and name “config.dat” of the file which was saved. You can use the “**Browse”** button next to this field to browse for the file.
- **Upload**: Click on “**update”** button to upload the previous settings**.**
- **Reset Settings to Default:**: You can click on the “**Reset**” button to reset the current configuration to the factory default
- **Help**: To request help information.

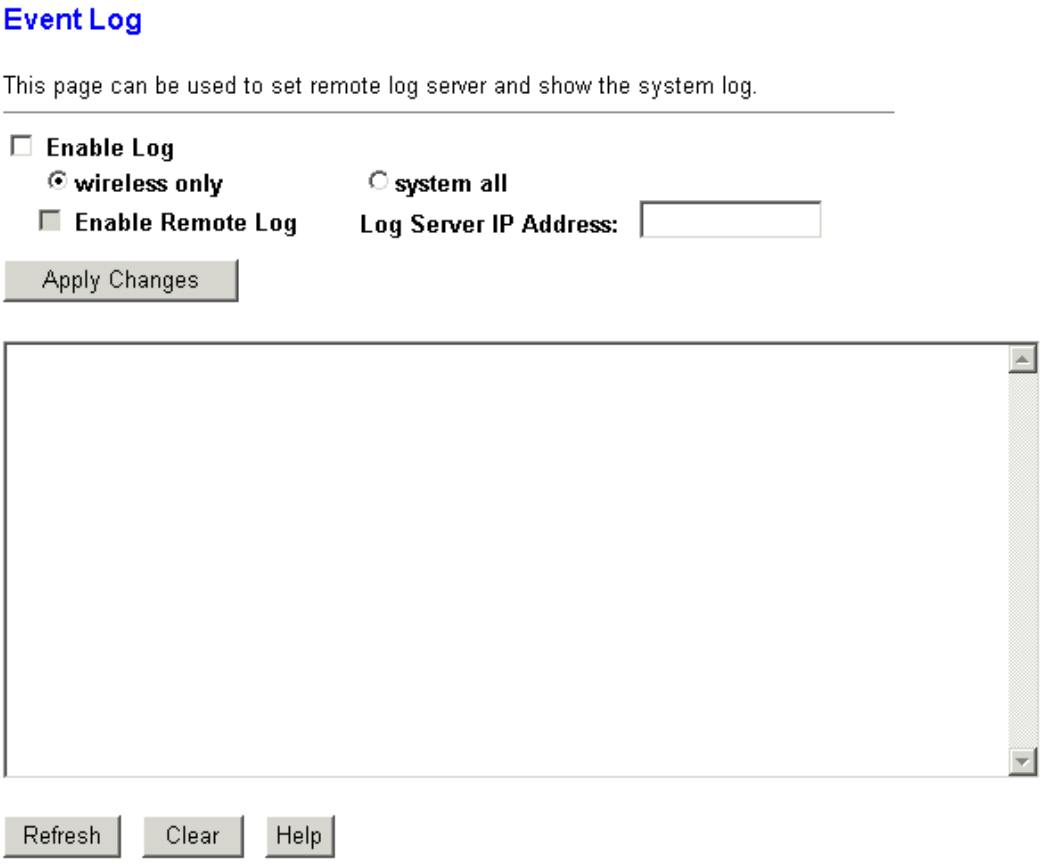
3.8.8 System Restart

You can restart the system on this page to replace the “power off “and “power on” action on this router.

- **Apply Changes**: Click on “Apply Changes” to confirm to reset this router.
- **Help**: To request help information.

3.9 Event Log

This wireless router supports System Log information. This data is useful for monitoring and troubleshooting the network.



- **Enable Log**: Enable the Log function.
- **Wireless only** or **system all**: Select to log the wireless events only or all system events.
- **Enable Remote Log**: Enable the Remote Log function.
- **Log Server IP Address**: You have to enter the Remote Log Server IP address when you use the Remote Log function. Logs can be sent to a remote server

running a syslog daemon.

- **Apply Changes**: Click on “Apply Changes” to save the setting.
- **Refresh**: Get the log data again.
- **Clear:** Click on “Clear” to clear all log data in the message box.
- **Help**: To request help information.

Appendix A: Troubleshooting

Symptom	Possible Causes	Things to Do
Inability to connect physically	• Incorrect or incompatible wireless network configuration. For example, shared key authentication is configured on the wireless AP/Router and the wireless client is attempting open system authentication • Inadvertent media access control (MAC) address filtering • The wireless network name is not visible	• Verify that the wireless network configurations between the wireless client and wireless AP/Router are compatible. •Using utility “Ipconfig”: 1. Click Start > Programs and select Command Prompt. 2. Type ipconfig /all at the command prompt. 3. Write down any configuration information you will need. At a minimum it will be the IP address of your computer and the Default Gateway. Make sure the client’s IP network is same as your AP/Router.
	• The wireless AP/Router and wireless network adapter are not using the same 802.11 standard (for example, you are using an 802.11a network adapter and a 802.11g wireless AP/Router)	• Use the same 802.11 standard for wireless AP/Router and wireless network adapter.
	• Radio frequency (RF) interference from nearby devices such as cordless phone and Bluetooth devices	• Remove the devices which cause the interference.
	• Wireless client is at the periphery of the RF range of the wireless AP/Router	• Move the wireless client which is at the periphery of the RF range more closer to the wireless AP/Router..
	• Improperly functioning or outdated wireless network adapter driver	• Obtain and install the most recent version of the wireless network adapter driver.

	• Cable failure	• Check the “Link” LED. Make sure that your Ethernet cables connect properly.
	• AP/Router is not power on	• Check the “Power” LED. Make sure that you've plugged in the power cord.
Intermittent connectivity	• IEEE 802.1X authentication is enabled on the wireless client and is not enabled on the wireless AP/Router • Improperly functioning or outdated wireless network adapter driver • Improperly functioning wireless AP/Router	• The symptom of this issue is when the wireless client loses connectivity every 3 minutes or so. Disable the authentication feature on the wireless client. • Obtain and install the most recent version of the wireless network adapter driver.
Incorrect, missing, or stale visible networks	• Improperly functioning or outdated wireless network adapter driver • Improperly functioning radio equipment on wireless AP/Router or wireless network adapter	• Obtain and install the most recent version of the wireless network adapter driver. • Run diagnostic functions on the wireless network adapter.
Wireless client has associated but no there is no valid IP address configuration or no network connectivity	• Authentication problem • Incorrect encryption key • Bad or missing certificates • Improperly functioning wireless AP	• Verify that the wireless network configurations between the wireless client and wireless AP/Router are compatible. • If you are using a static WEP key, verify that it has been correctly configured. • Verify whether other computers connected to the wireless AP have the same problem. If all wireless clients of the same wireless AP/Router have the same problem, check the wireless AP/Router settings. • IEEE 802.1X authentication might be failing. Check it again.
Wireless connection problems when performing a suspend and resume with a laptop computer	• The Wireless Zero Configuration or Wireless Configuration services are not running • Improperly functioning or	• Check to see if the Wireless Zero Configuration or Wireless Configuration services are running with the sc query wzcsvc command.

	outdated wireless network adapter driver • On a laptop computer, the wireless radio button might be in the off position	• With the Services snap-in, ensure that the Wireless Zero Configuration or Wireless Configuration services are configured to start automatically. • A wireless network adapter driver failing in early stages of service startup may result in the Wireless Zero Configuration or Wireless Configuration service not initializing over that interface.
Client can't connect to the AP/Router's configuration utility.	• Wrong IP address	• Make sure that your PC is using an IP address within the correct range. It should be 192.168.1.2 to 192.168.1.254 for the default value. • Make sure that the address of the subnet mask is 255.255.255.0. • Try to use “Ping” utility to ping the AP/Router’s IP, the default IP should be at 192.168.1.253 or 192.168.1.254 for AP and Router respectively.

Appendix B: Frequently Asked Questions

Q1: What is wireless networking?
Ans: The term wireless networking refers to technology that enables two or more computers to communicate using standard network protocols, but without network cabling. Strictly speaking, any technology that does this could be called wireless networking. The current buzzword however generally refers to wireless LANs. This technology, fuelled by the emergence of cross-vendor industry standards such as IEEE 802.11, has produced a number of affordable wireless solutions that are growing in popularity with business and schools as well as sophisticated applications where network wiring is impossible, such as in warehousing or point-of-sale handheld equipment.

Q2: What is a wireless network made up of?
Ans: There are two kinds of wireless networks:
a. An ad-hoc, or peer-to-peer wireless network consists of a number of computers each equipped with a wireless networking interface card. Each computer can communicate directly with all of the other wireless enabled computers. They can share files and printers this way, but may not be able to access wired LAN resources, unless one of the computers acts as a bridge to the wired LAN using special software. (This is called "bridging")

Figure A1: Ad-Hoc or Peer-to Peer Networking.
Each computer with a wireless interface can communicate directly with all of the others.

b. A wireless network can also use an access point, or base station. In this type of network the access point acts like a hub, providing connectivity for the wireless computers. It can connect (or "bridge") the wireless LAN to a wired LAN, allowing wireless computer access to LAN resources, such as file servers or existing Internet Connectivity.
There are two types of access points:
i. Dedicated hardware access points (HAP) such as Lucent's WaveLAN, Apple's Airport Base Station or WebGear's AviatorPRO. (See Figure A2). Hardware access points offer comprehensive support of most wireless features, but check your requirements carefully.

ii. Software Access Points which run on a computer equipped with a wireless network interface card as used in an ad-hoc or peer-to-peer wireless network. (See Figure A3) The Vicomsoft InterGate suites are software routers that can be used as a basic Software Access Point, and include features not commonly found in hardware solutions, such as Direct PPPoE support and extensive configuration flexibility, but may not offer the full range of wireless features defined in the 802.11 standard.
With appropriate networking software support, users on the wireless LAN can share files and printers located on the wired LAN and vice versa. Vicomsoft's solutions support file sharing using TCP/IP.

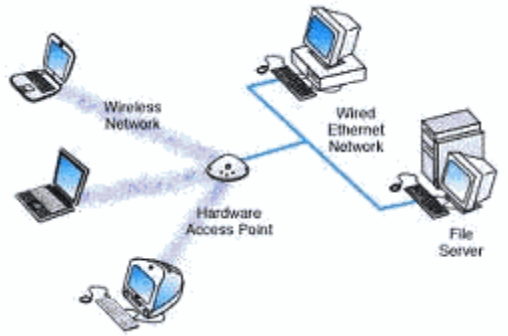


Figure A2: Hardware Access Point.
Wireless connected computers using a Hardware Access Point.

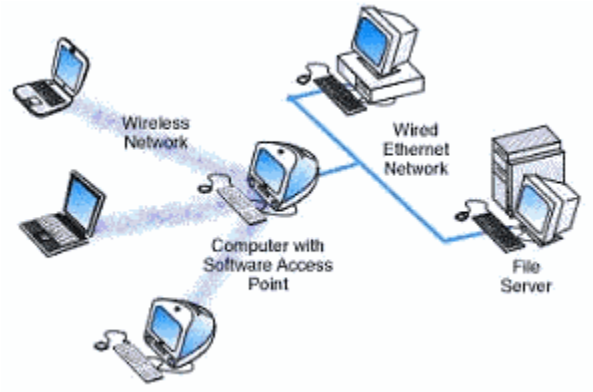


Figure A3: Software Access Point.
Wireless connected computers using a Software Access Point.

Q3: Can I mix wireless equipment from different vendors?
Ans: Because most wireless networking hardware vendors support the 802.11 standard they can inter operate. However, we recommend verification as the standard is a fairly recent one, and does specify two different methods for wireless communications; Frequency Hopping (FH) and Direct Sequence Spread Spectrum (DSSS or DS), which are not interoperable.
When purchasing wireless networking hardware from separate vendors be sure to obtain guarantees from the vendors that the hardware will interoperate and follows the standards.
Within a short time we expect all new wireless cards, like Ethernet cards, to become inexpensive, ubiquitous and totally interoperable.
Also of note is that the latest version of the standard defines 11mbps and 5.5mbps networking, with support for the older standard 1mbps and 2mbps speeds. This provides some compatibility with different or older equipment. Note that this new standard covers DS-type Networks, not FH types.
Software access points such as InterGate which uses the wireless interface of the host computer should have no compatibility issues with third party wireless hardware, as long as standards are followed. Typically wireless hardware is identified to the software as a network interface, and therefore can be used in the same way as any other network card.

Q4:If my computer is connected to a wireless LAN, can it communicate with computers on a wired LAN as well?
Ans: To do this you will need some sort of bridge between the wireless and wired network. This can be accomplished either with a hardware access point or a software access point. Hardware access points are available with various types of network interfaces, such as Ethernet or Token Ring, but typically require extra hardware to be purchased if your networking requirements change.
If networking requirements go beyond just interconnecting a wired network network to a small wireless network, a software access point may be the best solution.
A software access point does not limit the type or number of network interfaces you use. It may

also allow considerable flexibility in providing access to different network types, such as different types of Ethernet, Wireless and Token Ring networks. Such connections are only limited by the number of slots or interfaces in the computer used for this task.
Further to this the software access point may include significant additional features such as shared Internet access, web caching or content filtering, providing significant benefits to users and administrators.

Q5: What is Roaming?
Ans: A wireless computer can "roam" from one access point to another, with the software and hardware maintaining a steady network connection by monitoring the signal strength from in-range access points and locking on to the one with the best quality. Usually this is completely transparent to the user; they are not aware that a different access point is being used from area to area. Some access point configurations require security authentication when swapping access points, usually in the form of a password dialog box.
Access points are required to have overlapping wireless areas to achieve this as can be seen in the following diagram:

Figure A6: Roaming.
A user can move from Area 1 to Area 2 transparently. The Wireless networking hardware automatically swaps to the Access Point with the best signal.

Not all access points are capable of being configured to support roaming. Also of note is that any access points for a single vendor should be used when implementing roaming, as there is no official standard for this feature.

Q6: What about security?
Ans: Wireless communications obviously provide potential security issues, as an intruder does not need physical access to the traditional wired network in order to gain access to data communications. However, 802.11 wireless communications cannot be received --much less decoded-- by simple scanners, short wave receivers etc. This has led to the common misconception that wireless communications cannot be eavesdropped at all. However, eavesdropping is possible using specialist equipment.
To protect against any potential security issues, 802.11 wireless communications have a function called WEP (Wired Equivalent Privacy), a form of encryption which provides privacy comparable to that of a traditional wired network. If the wireless network has information that should be secure then WEP should be used, ensuring the data is protected at traditional wired network levels.
Also it should be noted that traditional Virtual Private Networking (VPN) techniques will work over wireless networks in the same way as traditional wired networks.
Section Two - Wireless Networking and the Internet

Q7: How can I use a wireless network to share an Internet connection?
Ans: Once you realize that wireless cards are analogous to Ethernet cards and that empty space

is analogous to Ethernet cabling, the answer to this question becomes clear. To share an Internet connection across a LAN you need two things:

(1) an Internet sharing hardware device or software program

(2) connection to a LAN

If your LAN is wireless, the same criteria apply. You need a hardware or software access point and a wireless LAN. Any computer equipped with a wireless network card running suitable Internet sharing software can be used as a software access point. (See Figure A8) A number of vendors offer hardware access points.

A hardware access point may provide Internet Sharing capabilities to Wired LAN computers, but does not usually provide much flexibility beyond very simple configurations. (See Figure A9)

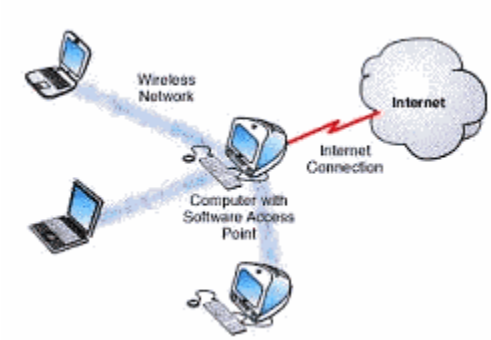


Figure A8: Software Access Point.
Wireless connected computers using a Software Access Point for shared Internet access.

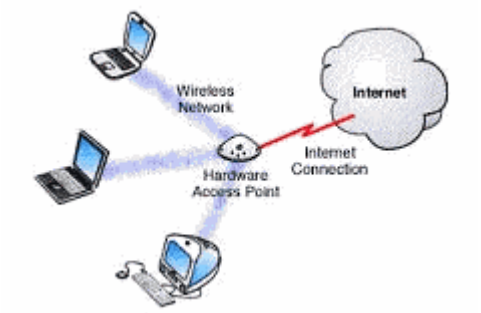


Figure A9: Hardware Access Point.
Wireless connected computers using a Hardware Access Point for shared Internet access.

Q8: How can I secure my wireless home network?

Ans: Here are 3 quick steps to help you secure your wireless network from unauthorized access. These steps are provided as general guidelines - for detailed help, please contact your hardware vendor.

1. Change the administrator password.
2. Change your SSID and turn off SSID Broadcasting
3. Enable WEP

Q9: What is Virtual Private Networking?

Ans: Typically, a Virtual Private Network (VPN) is defined as a group of two or more computer systems connected to a private network with limited public-network access that communicates securely over a public network, such as the internet: Security experts agree that VPNs include encryption, authentication of remote users or hosts, and mechanisms for hiding or masking information about private network topology from potential attackers on the public network:

Q10: What is encryption?

Ans: Encryption is a mathematical operation that transforms data from standard text to cipher text. Usually the mathematical operation requires that an alphanumeric key be supplied along with the standard text. The key plus standard text is processed by the encryption operation, which

produces secure scrambled text. Decryption is the opposite of encryption; it is the mathematical operation that transforms cipher text to standard text.

Q11: Why do I need a router?
Ans: The increased reliance on computers to store valuable information and the development of applications that share information over the internet through networked personal computers, in combination with the advent of computer hacking, has made information and network security an important issue. Typical analog modems and/or the higher-speed cable/DSL modems do not provide the necessary security to prevent someone from hacking into a computer. Having a device that provides network address translation (NAT) capability provides a simple solution to the hacking issue.

Q12: What is NAT?
Ans: Network Address Translation is used in a router to prevent hacking into the local area network (LAN). NAT substitutes a "private" IP address of devices located on the LAN side of the router with a new "public" IP address that is visible on the internet side of the router. By virtue of this simple implementation, any of up to 253 devices located on the LAN will be hidden from internet hackers. Only the router's IP address is visible on the internet.

Q13: Isn't NAT the same as "firewall"?
Ans: No. Though the term "firewall" has been used when describing a router's ability to hide the LAN IP addresses, a true firewall employs a technology called Stateful Packet Inspection (SPI). Firewalls provide a greater level of security and are generally more expensive than a NAT router. Firewalls give the administrator the ability to set up specific IP addresses or domain names that are allowed to be accessed, while refusing any other attempt to access the LAN. This is often referred to as filtering. Firewalls can also allow remote access to the private network through the use of secure login procedures and authentication certificates (VPN). Firewalls are used to prevent Denial of Service (DoS) attacks and can use software to provide content filtering to deny access to unwanted web sites.

Q14: Can the Access Point act as my DHCP Server?
Ans: No. The Access Point is nothing more than a wireless hub, and as such cannot be configured to handle DHCP capabilities.

Q15: Can I run an application from a remote computer over the wireless network?
Ans: This will depend on whether or not the application is designed to be used over a network. See the application's user guide to determine if it supports operation over a network.

Q16: What is Ad-hoc?
Ans: An Ad-hoc wireless LAN is a group of computers, each with a WLAN adapter, connected as an independent wireless LAN. An Ad-hoc wireless LAN is applicable at a departmental scale for a branch or SOHO operation.

Q17: What is Infrastructure?
Ans: An integrated wireless and wired LAN is called an Infrastructure configuration. Infrastructure is applicable to enterprise scale for wireless access to a central database, or wireless application for mobile workers.

Q18: What is WEP?
Ans: WEP is Wired Equivalent Privacy, a data privacy mechanism based on a 40-bit shared-key algorithm, as described in the IEEE 802.11 standard.

Q19: How do I reset the Access Point or Router?
Ans: Press the Reset button on the back of the Access Point for about ten seconds. This will reset the unit to its default settings.

Q20: Does the Access Point function as a firewall?
Ans: No. The Access Point is only a bridge from wired Ethernet to wireless clients.

Q21: What is the maximum number of users the Access Point facilitates?
Ans: It depends on the volume of data and may be less if many users create a large amount of network traffic.

Q22: What is the maximum number of IP addresses that the Router will support?
Ans: The Router will support up to 253 IP addresses.

Q23: Where is the Router installed on the network?
Ans: In a typical environment, the Router is installed between the cable/DSL modem and the LAN. Plug the Router into the cable/DSL modem's Ethernet port.

Q24: Does the Internet connection of the Router support 100Mbps Ethernet?
Ans: The Router's current hardware design supports up to 100Mbps Ethernet on its Internet port; however, the Internet connection speed will vary depending on the speed of your broadband connection. The Router also supports 100Mbps over the auto-sensing Fast Ethernet 10/100 switch on the LAN side of the Router.

Q25: Does the Router support any operating system other than Windows 98, Windows Millennium, Windows 2000, or Windows XP?
Ans: Yes, at this time, provide technical support to setup, configuration or troubleshooting of any non-Windows operating systems.

Q26: When all else fails in the installation, what can I do?
Ans: Reset the Router by holding down the reset button until the Power LED fully turns on and off. Reset your cable or DSL modem by powering the unit off and then on. Obtain and flash the latest firmware release that is readily available.

Q27: I am not able to get the web configuration screen for the Router. What can I do?
Ans :You may have to remove the proxy settings on your Internet browser, e.g., Netscape Navigator or Internet Explorer. Or remove the dial-up settings on your browser. Check with your browser documentation, and make sure that your browser is set to connect directly and that any dial-up is disabled. Make sure that your browser is set to connect directly and that any dial-up is disabled. For Internet Explorer, click Tools, Internet Options, and then the Connection tab. Make sure that Internet Explorer is set to Never dial a connection. For Netscape Navigator, click Edit, Preferences, Advanced, and Proxy. Make sure that Netscape Navigator is set to direct connection to the Internet.

Q28: Can the Router act as my DHCP server?
Ans: Yes. The Router has DHCP server software built-in.

Q29: How to use Virtual Server in Wireless/Broadband Router?
Ans: It’s also called Port forwarding. Virtual Server feature allows Internet users to access standard Servers on your LAN, via the Internet IP Sharer. Normally, Internet users would not be able to access a server on your LAN because your Server does not have a valid external IP Address.

Q30: Why Wireless/Broadband Router always has problem under Cable connection but not ADSL connection?
Ans: For ADSL, one subscriber shares one line. If your ISP provides you a 512K account then you can enjoy the full 512Kbps on your side. But Cable is different. Many subscribers share the same line. For example, the bandwidth of Cable is 1.5Mbps. If there are 25 users access Internet at the same time then the bandwidth of each user is 1500K/25 near 60K. The speed is just like the traditional modem connection. If there are only 5 users on line at this moment then each user can share the bandwidth to nearly 300K (1500K/5). So, the speed over ADSL is more stable than Cable. The access will hang up when the traffic is heavy over the Cable. It is the reason why many problems only happen over Cable.